E 3510-22-P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648-XB562]

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to the replacement of Pier 3 at Naval Station Norfolk in Norfolk, Virginia

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; proposed incidental harassment authorization; request for comments on proposed authorization and possible renewal.

SUMMARY: NMFS has received a request from the United States Department of the Navy (Navy) for authorization to take marine mammals incidental to the replacement of Pier 3 at Naval Station Norfolk in Norfolk, Virginia. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue an incidental harassment authorization (IHA) to incidentally take marine mammals during the specified activities. NMFS is also requesting comments on a possible one-time, one-year renewal that could be issued under certain circumstances and if all requirements are met, as described in **Request for Public Comments** at the end of this notice. NMFS will consider public comments prior to making any final decision on the issuance of the requested MMPA authorizations and agency responses will be summarized in the final notice of our decision.

DATES: Comments and information must be received no later than [*INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER*].

ADDRESSES: Comments should be addressed to Jolie Harrison, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service and should be submitted via email to *ITP.Corcoran@noaa.gov*.

Instructions: NMFS is not responsible for comments sent by any other method, to any other address or individual, or received after the end of the comment period. Comments, including all attachments, must not exceed a 25-megabyte file size. All comments received are a part of the public record and will generally be posted online at *www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act* without change. All personal identifying information (*e.g.*, name, address) voluntarily submitted by the commenter may be publicly accessible. Do not submit confidential business information or otherwise sensitive or protected information.

FOR FURTHER INFORMATION CONTACT: Kim Corcoran, Office of Protected Resources, NMFS, (301) 427-8401. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act*. In case of problems accessing these documents, please call the contact listed above.

SUPPLEMENTARY INFORMATION:

Background

The MMPA prohibits the “take” of marine mammals, with certain exceptions. sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq*.) direct the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed incidental take authorization may be provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other “means of effecting the least practicable adverse impact” on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stocks for taking for certain subsistence uses (referred to in shorthand as “mitigation”); and requirements pertaining to the mitigation, monitoring and reporting of the takings are set forth.

The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

National Environmental Policy Act

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq*.) and NOAA Administrative Order (NAO) 216-6A, NMFS must review our proposed action (*i.e.*, the issuance of an IHA) with respect to potential impacts on the human environment.

This action is consistent with categories of activities identified in Categorical Exclusion B4 (IHAs with no anticipated serious injury or mortality) of the Companion Manual for NOAA Administrative Order 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has preliminarily determined that the issuance of the proposed IHA qualifies to be categorically excluded from further NEPA review.

We will review all comments submitted in response to this notice prior to concluding our NEPA process or making a final decision on the IHA request.

Summary of Request

On July 15, 2021 NMFS received a request from the Navy for an IHA to take marine mammals incidental to the reconstruction of Pier 3 at Naval Station Norfolk in Norfolk, Virginia. The application was deemed adequate and complete on October 27, 2021. Subsequently, the Navy provided a revised and updated version of the application, which was determined to be adequate and complete on January 10, 2022. The Navy's request is for take of a small number of five species by Level B harassment and Level A harassment. Neither the Navy nor NMFS expects serious injury or mortality to result from this activity and, therefore, an IHA is appropriate. NMFS previously issued IHAs to the Navy for similar work (86 FR 48986; September 1, 2021; 85 FR 33139; June 01, 2020; 83 FR 30406; June 28, 2018). This proposed IHA would cover one year of a larger project for which the Navy plans to submit a request for a Letter of Authorization (LOA) for additional work occurring from April 1, 2023 through December 30, 2026. The larger 4-year project involves the demolition and reconstruction of a submarine pier at Naval Station Norfolk.

Description of Proposed Activity

Overview

The Navy is proposing the replacement of Pier 3 at Naval Station (NAVSTA) Norfolk in Norfolk, VA. The existing Pier 3 would be completely demolished and a new Pier 3 will be constructed immediately north of the existing location (See Figure 1). Work at Pier 4, Pier 3T and the bulkheads associated with Pier 3 and 3T (CEP-175, CEP-176, and CEP-102) will also occur (See Figure 1). The proposed project includes impact and vibratory pile driving and vibratory pile removal and drilling. Drilling is considered a continuous noise source, similar to vibratory pile driving. Sounds resulting from pile driving and removal may result in the incidental take of marine mammals by Level A and Level B harassment in the form of auditory injury or behavioral harassment. The in-water construction period for the proposed action will occur over 12 months.

Dates and Duration

The proposed IHA would be effective from April 1, 2022 to March 31, 2023. Approximately 280 days will be required for the project. The Navy plans to conduct all work during daylight hours.

Specific Geographic Region

Pier 3 at NAVSTA Norfolk is located at the confluence of the Elizabeth River, James River, Nansemond River, LaFeyette, Willoughby Bay, and Chesapeake Bay (Figure 2).

Human generated sound is a significant contributor to the ambient acoustic environment surrounding NAVSTA Norfolk, as it is located in close proximity to shipping channels as well as several Port of Virginia facilities with frequent, noise-producing vessel traffic that, altogether, have an annual average of 1,788 vessel calls (Port of Virginia, 2021). Other sources of human-generated underwater sound not specific to naval installations include sounds from echo sounders on commercial and recreational vessels, industrial ship noise, and noise from recreational boat engines. Additionally, on average, maintenance dredging of the navigation channel occurs every 2 years (USACE and Port of Virginia, 2018).

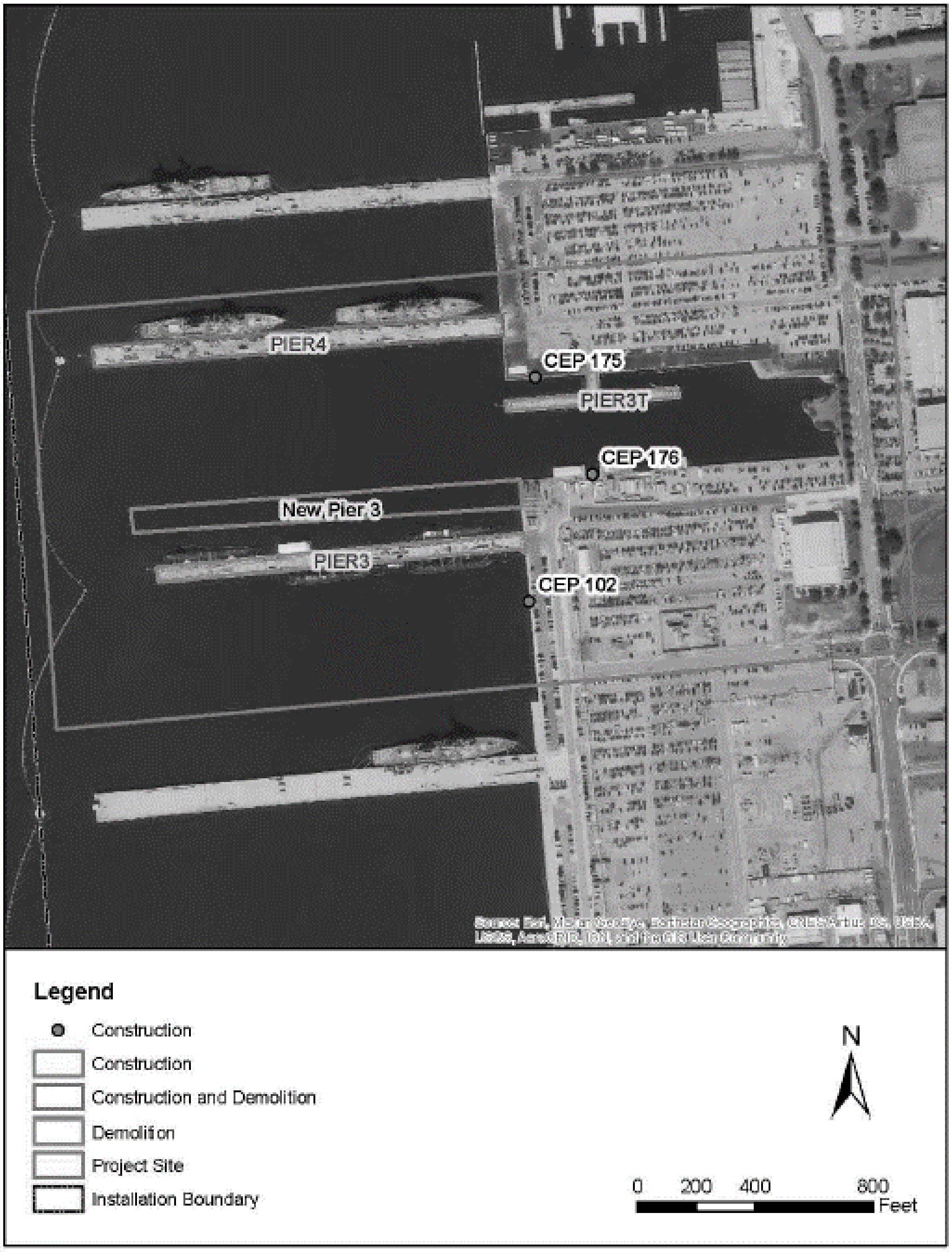

Figure 1. Project Site Map, location of existing and proposed Pier 3.

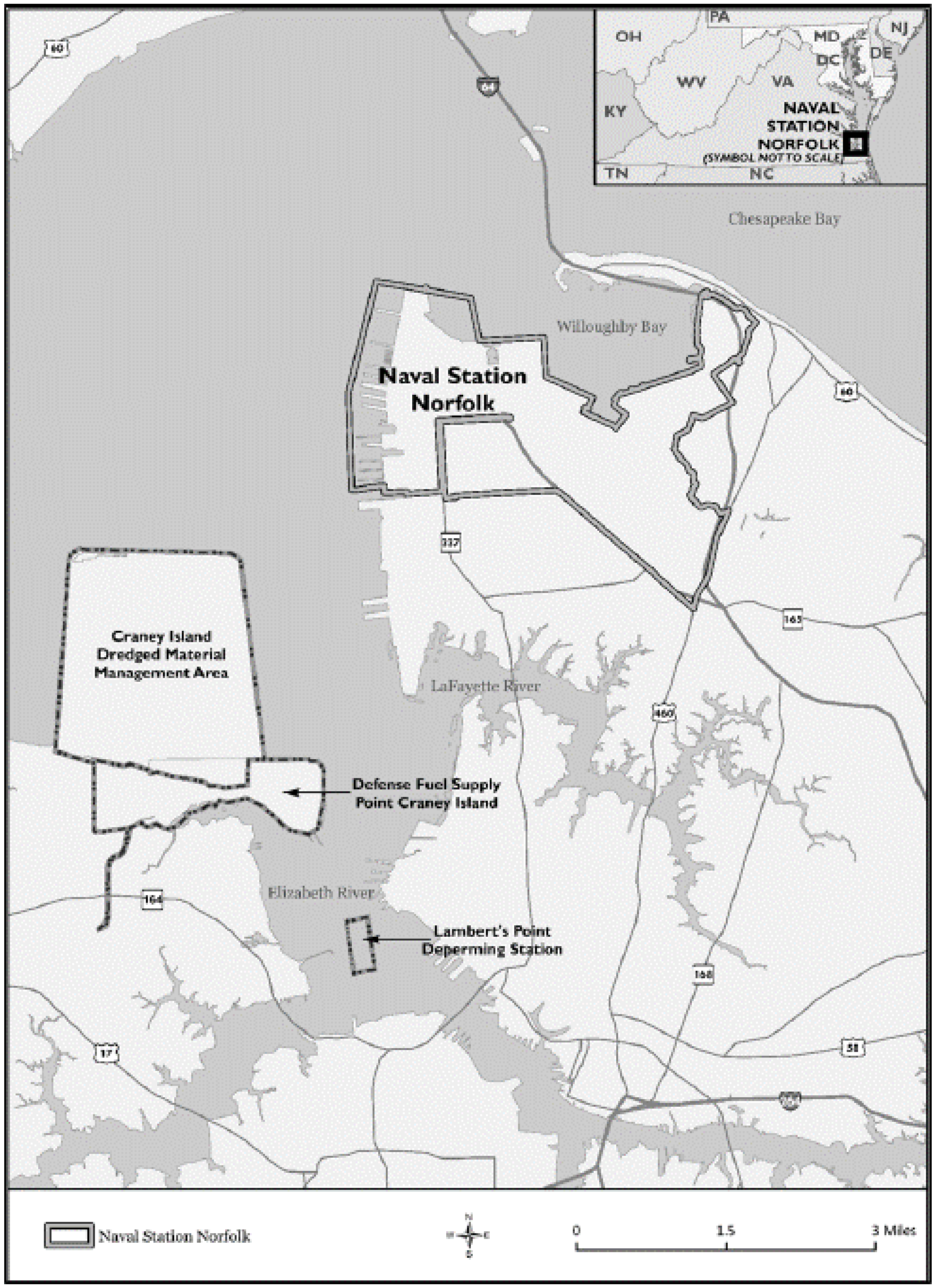

Figure 2. Project location Map, Naval Station Norfolk.

Detailed Description of Specific Activity

The proposed project involves the replacement of Pier 3 at the NAVSTA waterfront. The existing Pier 3 would be completely demolished and a new Pier 3 would be constructed immediately north of the existing location. Additional work associated with the replacement of Pier 3 includes the outfitting of Pier 4 for temporary submarine berthing, demolition of Pier 3T, construction at the CEP-176 and the CEP-175 bulkheads, and beginning of construction of the CEP-102 bulkhead and relieving platform. The project includes six phases that will be completed under this proposed IHA and the future requested LOA. A preliminary work schedule and activity details for the work under this proposed IHA are provided in Table 1. In water construction activities and specific project phases that would occur under this IHA are described in more detail below:

Pile Removal--Piles are anticipated to be removed with a vibratory hammer, however direct pull or clamshell removal may be used depending on site conditions. Since vibratory removal is the loudest activity, to be precautionary, we assume all piles will be removed with a vibratory hammer. Pile removal methods are described as follows:

- Vibratory Extraction – This method uses a barge-mounted crane with a vibratory driver to remove all pile types. The vibratory driver is suspended from a crane by a cable and positioned on top of the pile to loosen the pile from the sediment. Once the pile is released from the sediments, the crane continues to raise the driver and pull the pile from the sediment and place it on a barge;
- Clamshell – In cases where a vibratory driver is not possible (*e.g.*, when the pile may break apart from clamp force and vibration), a clamshell apparatus may be lowered from the crane in order to remove pile stubs. The use and size of the clamshell bucket would be minimized to reduce the potential for generating turbidity during removal; and

- Direct Pull – Pile may also be removed by wrapping piles with a cable or chain and pulling them directly from the sediment with a crane. This method is based on site conditions.

Pile Installation--The proposed pile installation/removal would occur using land-based or barge-mounted cranes and vary in method based on pile type. Concrete piles would be installed using an impact hammer. Steel piles and polymeric piles would be installed using an impact hammer or vibratory hammer. Drilling may also occur for the installation of concrete bearing piles at CEP-102, concrete fender piles, and polymeric fender piles. No concurrent activity will occur.

Outfitting Pier 4 - In order to support the temporary berthing of submarines, Pier 4 fender support piles will be replaced with stronger, more structurally sound fender piles. On the south side of Pier 4 (see Figure 1), 36, 14-inch timber piles will be removed with a vibratory hammer and 36, 24-inch precast square concrete piles will be installed with an impact hammer with drilling used as necessary.

Demolition of Pier 3T - The existing Pier 3T will be completely demolished and will not be replaced. Demolition of Pier 3T will include the removal of 286, 18-inch square concrete piles and 87, 14-inch timber piles using a vibratory hammer.

CEP-175 Bulkhead – Once Pier 3T is demolished, a new fender system will be constructed at CEP-175 where Pier 3T previously abutted the bulkhead (see Figure 1). To accomplish this, nine, 13-inch polymeric fender piles would be installed to align with the existing fender system. Piles will be installed with either impact or vibratory hammers, with drilling used as necessary.

Pier 3 Construction – The new Pier 3 will be constructed immediately north of and adjacent to the current Pier 3 (see Figure 1). The new pier will consist of a cast in place concrete deck supported by 530, 24-inch square concrete bearing piles. A fender system will be constructed on the north and south sides of the pier consisting of 392, 24-

inch square concrete and 18, 18-inch steel pipe fender piles for berthing submarines. The fender system piles would not be installed in year one and therefore are not analyzed in this proposed IHA.

CEP-176 Bulkhead – The wharf upgrade will consist of a new steel combi-wall bulkhead and relieving platform on the landside of the bulkhead that serves as the bulkhead anchoring system. The bulkhead will be constructed using 109, 42-inch steel pipe bearing piles and 221, 28-inch steel sheet piles. The steel pipe pile/steel sheet pile combination will be driven waterside of the existing deteriorated concrete bulkhead and will be installed with either an impact or vibratory hammer. Once Pier 3T is demolished and the new CEP-176 bulkheads are completed, dredging would occur along the face of CEP-176 bulkhead to allow for safe berthing and maneuvering. As described above, the project area is a noisy, industrial area. Noise created during dredging operations may exceed harassment thresholds, but is similar to noise produced through other common activities occurring at the project location and is unlikely to be distinguishable from the background noise created by ongoing industrial activity. Therefore, the likelihood of harassing marine mammals is reduced and no incidental takes are expected as a result of the dredging activity. Dredging and disposal activities are not discussed further in this document.

CEP-102 Bulkhead – Repairs to the CEP-102 bulkhead will begin with the demolition of a portion of the existing fender pile system prior to new construction of Pier 3 and the CEP-176 bulkhead. Fender piles to be removed include: 22, 18-inch square concrete fender piles, 9, 14-inch timber fender piles, and 4, 13-inch polymeric piles. All piles will be removed by use of a vibratory hammer. A steel combi-wall bulkhead and a reinforced concrete relieving platform would then be constructed in two phases, with a small, approximately 50-foot portion, constructed concurrently with construction of the new Pier 3. Noise producing sources will not be used simultaneously, however. The portion of the CEP-102 combi-wall that will be constructed under this proposed IHA consists of 4, 42-inch steel pipe bearing piles and 8, 28-inch steel sheet piles that will be installed with either an impact or vibratory hammer. Eleven, 24-inch precast concrete fender piles will also be installed using an impact hammer. Drilling may be utilized as needed prior to the use of the impact hammer.

Table 1 outlines a preliminary work schedule for the demolition and reconstruction of Pier 3 at NAVSTA. Some project elements will use only one method of pile installation (e.g., vibratory OR drilling/impact OR impact only), but all methods have been analyzed. The method of installation will be determined by the construction crew once demolition and installation has begun. Therefore, the total take estimate reflects the worst case scenario for the proposed project.

Table 1. Preliminary Estimated In-Water Construction Schedule for Year 1.

Location	Activity	Amount and Schedule	Type and Size	Method[1]	Daily Production Rate (Piles/day)	Strikes/Duration per pile	Total Production days
Pier 4	Demolition of Existing Fender Piles	36 fender piles June 2022-September 2022	14-inch timber	Vibratory Hammer	4	60 minutes	9 days
	Installation of Fender Piles	36 fender piles June 2022-September 2022	24-inch precast concrete square	Drilling with Impact Hammer OR	6	6 hours	6 days
				Impact Hammer	12	450 strikes	3 days
Pier 3T	Demolition of Existing Pier 3T	286 bearing piles August 2022-November 2022	18-inch precast concrete square	Vibratory Hammer	4	60 minutes	72 days
		87 fender piles August 2022-November 2022	14-inch timber	Vibratory Hammer	4	60 minutes	22 days
CEP-175	Repair Fender System	9 fender piles October 2022-	13-inch polymeric	Drilling with Impact Hammer OR	7	60 minutes	2 days

		November 2022		Impact Hammer OR	7	450 strikes	2 days
				Vibratory Hammer	7	30 minutes	2 days
CEP-102	Demolish Partial Existing Fender System	22 fender piles October 2022-November 2022	18-inch concrete square	Vibratory Hammer	4	60 minutes	6 days
		9 fender piles October 2022-November 2022	14-inch timber	Vibratory Hammer	4	60 minutes	3 days
		4 fender piles	13-inch polymeric	Vibratory Hammer	4	60 minutes	1 day
Pier 3	Begin Construction of New Pier 3	300 bearing piles October 2022-March 2023	24-inch precast concrete square	Impact Hammer	2	3200 strikes	150 days
CEP-176	Begin Construction of New Bulkhead	109 bearing piles December 2022-30 March 2023	42-inch steel pipe	Impact Hammer OR	2	1800 strikes	55 days
				Vibratory Hammer	2	240 minutes	55 days
		221 sheet piles December 2022-30 March 2023	28-inch steel sheet	Impact Hammer OR	4	270 strikes	56 days
				Vibratory Hammer	4	60 minutes	56 days
CEP-102	Construction of a Portion of the New Bulkhead	4 bearing piles December 2022-30 March 2023	42-inch steep pipe	Impact Hammer OR	2	2000 strikes	2 days
				Vibratory Hammer	2	240 minutes	2 days
		8 bulkhead sheet piles December 2022-30 March 2023	28-inch steel sheet	Impact Hammer OR	4	270 strikes	2 days
				Vibratory Hammer	4	60 minutes	2 days

		11 bearing piles December 2022-30 March 2023	24-inch precast concrete square	Pre-drilling with Impact Hammer OR	2	6 hours	6 days
				Impact Hammer	2	2700 strikes	6 days
Total piles installed, extracted, or drilled		1,142					
Total days pile driving/extraction/drilling							280 days[2,3,4]

1. Only one method of installation is likely; however, because the exact means of installation are up to the selected construction contractor, all possibilities have been analyzed.
2. Total number of days takes into account the most days possible for each pile type with multiple potential installation methods (*i.e.*, the worst case scenario).
3. The preliminary schedule has work at Pier 4, demolition of Pier 3T, start of construction at Pier 3, and work at CEP-175 potentially occurring in the same timeframe, thus multiple pile types could be driven in the same day and the total days of pile driving/extraction/drilling reflects this assumption. Thus, the maximum number of days of work from these activities is associated with beginning the construction of Pier 3 (150 days). Adding remaining work, minus those activities that would occur during the same time frame (Pier 4, demo Pier 3T, and CEP-175), equals 280 days.
4. Multiple types of equipment may be used on the same day; however, use of multiple noise sources (hammers or drills) would not occur at the same time. There will be no simultaneous activities associated with this project.

Proposed mitigation, monitoring, and reporting measures are described in detail later in this document (please see **Proposed Mitigation** and **Proposed Monitoring and Reporting**).

Description of Marine Mammals in the Area of Specified Activities

Sections 3 and 4 of the Navy's application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history, of the potentially affected species. Additional information regarding population trends and threats may be found in NMFS's Stock Assessment Reports (SARs; *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*) and more general information about these species (*e.g.*, physical and behavioral descriptions) may be found on NMFS's website (*https://www.fisheries.noaa.gov/find-species)*.

Table 2 lists all species or stocks for which take is expected and proposed to be authorized for this action, and summarizes information related to the population or stock, including regulatory status under the MMPA and Endangered Species Act (ESA) and potential biological removal (PBR), where known. For taxonomy, we follow Committee on Taxonomy (2021). PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS's SARs). While no mortality is anticipated or authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS's stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS's U.S. Atlantic and Gulf of Mexico SARs (*e.g.*, Hayes *et al.,* 2021). All values presented in Table 2 are the most recent available at the time of publication and are available in the 2021 draft SARs (Hayes *et al.,* 2021).

Table 2. Marine Mammal Species Likely to Occur Near the Project Area.

Common name	Scientific name	Stock	ESA/MMPA status; Strategic (Y/N)[1]	Stock abundance (CV, N_{min}, most recent abundance survey)[2]	PBR	Annual M/SI[3]
Order Cetartiodactyla – Cetacea – Superfamily Mysticeti (baleen whales)						
Family Eschrichtiidae						
Humpback whale	*Megaptera novaeangliae*	Gulf of Maine	-,-;Y	1,396 (0; 1,380; 2016)	22	12.15
Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Family Delphinidae						
Bottlenose dolphin	*Tursiops truncatus*	Western North Atlantic (WNA) Coastal, Northern Migratory	-,-; Y	6,636(0.41; 4,759; 2016)	48	12.2-21.5
Bottlenose dolphin	*Tursiops truncatus*	WNA Coastal, Southern Migratory	-,-; Y	3,751 (0.06; 2,353; 2016)	24	0-18.3

Bottlenose dolphin	*Tursiops truncatus*	Northern North Carolina Estuarine	-,-; Y	823 (0.06; 782; 2017)	7.8	7.2-30
Family Phocoenidae (porpoises)						
Harbor porpoise	*Phocoena phocoena*	Gulf of Maine/Bay of Fundy	-,-;N	95,543 (0.31; 74,034; 2016)	851	217
Order Carnivora – Superfamily Pinnipedia						
Family Phocidae (earless seals)						
Harbor seal	*Phoca vitulina*	WNA	-; N	61,336 (0.08; 57,637; 2018)	1729	339
Gray seal[4]	*Halichoerus grypus*	WNA	-; N	27,300 (0.22; 23,785; 2016)	1,389	4,453

[1] - Endangered Species Act (ESA) status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.
[2] - NMFS marine mammal stock assessment reports online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments/*. CV is coefficient of variation; Nmin is the minimum estimate of stock abundance. In some cases, CV is not applicable [explain if this is the case]
[3] - These values, found in NMFS's SARs, represent annual levels of human-caused mortality plus serious injury (M/SI) from all sources combined (*e.g.,* commercial fisheries, ship strike). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value or range. A CV associated with estimated mortality due to commercial fisheries is presented in some cases.
[4] - This stock abundance estimate for only the U.S. portion of this stock. The actual stock abundance, including the Canadian portion of the population, is estimated to be approximately 451,431 animals. The PBR value listed here is only for the U.S. portion of the stock, while M/SI reflects both the Canadian and U.S. portions.

As indicated above, all five species (with seven managed stocks) in Table 2 temporally and spatially co-occur with the activity to the degree that take is reasonably likely to occur, and we have proposed authorizing it. While North Atlantic right whales (*Eubalaena glacialis*), minke whales *(Balaenoptera acutorostrata acutorostrata*), and fin whales (*Balaenoptera physalus*) have been documented in the area, the temporal and/or spatial occurrence of these whales is far outside the proposed area for this project and take is not expected to occur. Therefore, they are not discussed further beyond the explanation provided below.

Based on sighting data and passive acoustic studies, the North Atlantic right whale could occur off the coast of Virginia year-round (Department of Navy (DoN) 2009; Salisbury *et al.,* 2006). They have also been reported seasonally off Virginia during migrations in the spring, fall, and winter (Cetacean and Turtle Assessment Program

(CeTAP) 1981, 1982; Niemeyer *et al.,* 2008; Kahn *et al.,* 2009; McLellan 2011b, 2013; Mallette *et al.,* 2016a, 2016b, 2017, 2018a; Palka *et al.,* 2017; Cotter 2019). Right whales are known to frequent the coastal waters of the mouth of the Chesapeake Bay (Knowlton *et al.,* 2002) and the area is a seasonal management area (November 1 – April 30) mandating reduced ship speeds out to approximately 20 nautical miles (37 kilometers [km]); however, the project area is further inside the Bay and away from this area.

North Atlantic right whales have stranded in Virginia, one each in 2001, 2002, 2004, 2005; three during winter (February and March) and one in summer (September) Costidis *et al.,* 2017, 2019). In January 2018, a dead, entangled North Atlantic right whale was observed floating over 60 miles (96.6 km) offshore of Virginia Beach (Costidis *et al.,* 2019). All North Atlantic right whale strandings in Virginia waters have occurred on ocean-facing beaches along Virginia Beach and the barrier islands seaward of the lower Delmarva Peninsula (Costidis *et al.,* 2017). Right whales are not expected to occur in the project area, and NMFS is not proposing to authorize take of this species.

Fin whales have been sighted off Virginia (CeTAP 1981, 1982; Swingle *et al.,* 1993, DoN 2009; Hyrenback *et al.,* 2012; Barco 2013; Mallette *et al.,* 2016a, b; Aschettino *et al.,* 2018; Engelhaupt *et al.,* 2017, 2018; Cotter 2019), and in the Chesapeake Bay (Bailey 1948; CeTAP 1981, 1982; Morgan *et al.,* 2002; Barco 2013; Aschettino *et al.,* 2018); however, they are not likely to occur in the project area. Sightings have been documented around the Chesapeake Bay Bridge Tunnel (CBBT) during the winter months (CeTAP 1981, 1982; Barco 2013; Aschettino *et al.,* 2018).

Eleven fin whale strandings have occurred off Virginia from 1988 to 2016 mostly during the winter months of February and March, followed by a few in the spring and summer months (Costidis *et al.,* 2017). Six of the strandings occurred in the Chesapeake Bay (three on eastern shore; three on western shore) with the remaining five occurring on the Atlantic coast (Costidis *et al.,* 2017. Documented strandings near the project area have occurred: February 2012, a dead fin whale washed ashore on Oceanview Beach in Norfolk (Swingle *et al.,* 2013); December 2017, a live fin whale stranded on a shoal in Newport News and died at the site (Swingle *et al.,* 2018); February 2014, a dead fin whale stranded on a sand bar in Pocomoke Sound near Great Fox Island, Accomack (Swingle *et al.,* 2015); and, March 2007, a dead fin whale near Craney Island, in the Elizabeth River, in Norfolk (Barco 2013). Only stranded fin whales have been documented in the project area; no free-swimming fin whales have been observed. Fin whales are not expected to occur in the project area, and NMFS is not proposing to authorize take of this species.

Minke whales have been sighted off Virginia (CeTAP 1981, 1982; Hyrenbach *et al.,* 2012; Barco 2013; Mallette *et al.,* 2016a, b; McLellan 2017; Engelhaupt *et al.,* 2017, 2018; Cotter 2019), near the CBBT (Aschettino *et al.,* 2018), but sightings in the project area are from strandings (Jensen and Silber 2004; Barco 2013; DoN 2009). In August 1994, a ship strike incident involved a minke whale in Hampton Roads (Jensen and Silber 2004; Barco 2013). It was reported that the animal was struck offshore and was carried inshore on the bow of a ship (DoN 2009). Twelve strandings of minke whales have occurred in Virginia waters from 1988 to 2016 (Costidis *et al.,* 2017). There have been six minke whale stranding from 2017 through 2020 in Virginia waters. Minke whales are not expected to occur in the project area, and NMFS is not proposing to authorize take of this species.

Humpback Whales

Humpback whales are found worldwide in all oceans. In winter, humpback whales from waters off New England, Canada, Greenland, Iceland, and Norway, migrate to mate and calve primarily in the West Indies, where spatial and genetic mixing among these groups occurs. NMFS defines a humpback whale stock on the basis of feeding location, *i.e.,* Gulf of Maine. However, our reference to humpback whales in this document refers to any individual of the species that are found in the species geographic region. These individuals may be from the same breeding population (*e.g.,* West Indies breeding population of humpback whales) but visit different feeding areas.

Based on photo-identification, only 39 percent of individual humpback whales observed along the mid- and south Atlantic U.S. coast are from the Gulf of Maine stock (Barco *et al.,* 2002). Therefore, the SAR abundance estimate is an underrepresentation of the relevant population, *i.e.,* the West Indies breeding population.

Prior to 2016, humpback whales were listed under the ESA as an endangered species worldwide. Following a 2015 global status review (Bettridge *et al.,* 2015), NMFS established 14 DPSs with different listing statuses (81 FR 62259; September 8, 2016) pursuant to the ESA. Humpback whales in the project area are expected to be from the West Indies DPS, which consists of the whales whose breeding range includes the Atlantic margin of the Antilles from Cuba to northern Venezuela, and whose feeding range primarily includes the Gulf of Maine, eastern Canada, and western Greenland. This DPS is not ESA listed. Bettridge *et al.,* (2003) estimated the size of the West Indies DPS at 12,312 (95% CI 8,688-15,954) whales in 2004-05, which is consistent with previous population estimates of approximately 10,000-11,000 whales (Stevick *et al.,* 2003; Smith *et al.,* 1999) and the increasing trend for the West Indies DPS (Bettridge *et al.,* 2015).

Although humpback whales are migratory between feeding areas and calving areas, individual variability in the timing of migrations may result in the presence of individuals in high-latitude areas throughout the year (Straley, 1990). Records of humpback whales off the U.S. mid-Atlantic coast (New Jersey to North Carolina) from January through March suggest these waters may represent a supplemental winter feeding ground used by juvenile and mature humpback whales of U.S. and Canadian North Atlantic stocks (LaBrecque *et al.,* 2015).

Humpback whales are most likely to occur near the mouth of the Chesapeake Bay and coastal waters of Virginia Beach between January and March; however, they could be found in the area year-round, based on shipboard sighting and stranding data (Barco and Swingle, 2014; Aschettino *et al.,* 2015; 2016; 2017; 2018). Photo-identification data support the repeated use of the mid-Atlantic region by individual humpback whales. Results of the vessel surveys show site fidelity in the survey area for some individuals and a high level of occurrence within shipping channels—an important high-use area by both the Navy and commercial traffic (Aschettino *et al.,* 2015; 2016; 2017; 2018). Nearshore surveys conducted in early 2015 reported 61 individual humpback whale sightings, and 135 individual humpback whale sightings in late 2015 through May 2016 (Aschettino *et al.,* 2016). Subsequent surveys confirmed the occurrence of humpback whales in the nearshore survey area: 248 individuals were detected in 2016-2017 surveys (Aschettino *et al.,* 2017), 32 individuals were detected in 2017-2018 surveys (Aschettino *et al.,* 2018), and 80 individuals were detected in 2019 surveys (Aschettino *et al.,* 2019). Sightings in the Hampton Roads area in the vicinity of NAVSTA Norfolk were reported in nearshore surveys and through tracking of satellite-tagged whales in 2016, 2017 and 2019. The numbers of whales detected, most of which were juveniles, reflect the varying level of survey effort and changes in survey objectives from year to year, and do not indicate abundance trends over time. Most recently, the Hampton Roads Bridge-Tunnel Expansion Project (HRBT), which spanned from September 2020 through July 10, 2021 did not observe any humpback whales near the project site between Norfolk and Hampton, VA over 197 days of observations (Hampton Roads Connector Partners (HRCP), *Unpublished)*.

Bottlenose Dolphin

Along the U.S. East Coast and northern Gulf of Mexico, the bottlenose dolphin stock structure is well studied. There are currently 53 management stocks identified by

NMFS in the western North Atlantic and Gulf of Mexico, including oceanic, coastal, and estuarine stocks (Hayes *et al.,* 2017; Waring *et al.,* 2015, 2016).

There are two morphologically and genetically distinct bottlenose dolphin morphotypes (distinguished by physical differences) described as coastal and offshore forms (Duffield *et al.,* 1983; Duffield, 1986). The offshore form is larger in total length and skull length, and has wider nasal bones than the coastal form. Both inhabit waters in the western North Atlantic Ocean and Gulf of Mexico (Curry and Smith, 1997; Hersh and Duffield, 1990; Mead and Potter, 1995) along the U.S. Atlantic coast. The coastal morphotype of bottlenose dolphin is continuously distributed along the Atlantic coast south of Long Island, New York, around the Florida peninsula, and along the Gulf of Mexico coast. This type typically occurs in waters less than 25 meters deep (Waring *et al.,* 2015). The range of the offshore bottlenose dolphin includes waters beyond the continental slope (Kenney., 1990), and offshore bottlenose dolphins may move between the Gulf of Mexico and the Atlantic (Wells *et al.,* 1999).

Two coastal stocks are likely to be present in the project area: Western North Atlantic Northern Migratory Coastal stock and Western North Atlantic Southern Migratory Coastal stock. Additionally, the Northern North Carolina Estuarine System stock may occur in the project area.

Bottlenose dolphins are the most abundant marine mammal along the Virginia coast and within the Chesapeake Bay, typically traveling in groups of 2 to 15 individuals, but occasionally in groups of over 100 individuals (Engelhaupt *et al.,* 2014; 2015; 2016). Bottlenose dolphins of the Western North Atlantic Northern Migratory Coastal stock winter along the coast of North Carolina and migrate as far north as Long Island, New York, in the summer. They are rarely found north of North Carolina in the winter (NMFS, 2018a). The Western North Atlantic Southern Migratory Coastal stock occurs in waters of southern North Carolina from October to December, moving south during winter months and north to North Carolina during spring months. During July and August, the Western North Atlantic Southern Migratory Coastal stock is presumed to occupy coastal waters north of Cape Lookout, North Carolina, to the eastern shore of Virginia (NMFS, 2018a). It is possible that these animals also occur inside the Chesapeake Bay and in nearshore coastal waters. The North Carolina Estuarine System stock dolphins may also occur in the Chesapeake Bay during July and August (NMFS, 2018a).

Vessel surveys conducted along coastal and offshore transects from NAVSTA Norfolk to Virginia Beach in most months from August 2012 to August 2015 reported bottlenose dolphins throughout the survey area, including the vicinity of NAVSTA Norfolk (Engelhaupt *et al.,* 2014; 2015; 2016). The final results from this project confirmed earlier findings that bottlenose dolphins are common in the study area, with highest densities in the coastal waters in summer and fall months. However, bottlenose dolphins do not completely leave this area during colder months, with approximately 200-300 individuals still present in winter and spring months, which is commonly referred to as the Chesapeake Bay resident dolphin population (Engelhaupt *et al.,* 2016).

Harbor Porpoise

Harbor porpoises inhabit cool temperate-to-subpolar waters, often where prey aggregations are concentrated (Watts and Gaskin, 1985). Thus, they are frequently found in shallow waters, most often near shore, but they sometimes move into deeper offshore waters. Harbor porpoises are rarely found in waters warmer than 63 degrees Fahrenheit (17 degrees Celsius) (Read 1999) and closely follow the movements of their primary prey, Atlantic herring (Gaskin 1992).

In the western North Atlantic, harbor porpoise range from Cumberland Sound on the east coast of Baffin Island, southeast along the eastern coast of Labrador to Newfoundland and the Gulf of St. Lawrence, then southwest to about 34 degrees North on the coast of North Carolina (Waring *et al.,* 2016). During winter (January to March), intermediate densities of harbor porpoises can be found in waters off New Jersey to North Carolina, and lower densities are found in waters off New York to New Brunswick, Canada (Waring *et al.,* 2016). Harbor porpoises sighted off the mid-Atlantic during winter include porpoises from other western North Atlantic populations (Rosel *et al.,* 1999). There does not appear to be a temporally coordinated migration or a specific migratory route to and from the Bay of Fundy region (Waring *et al.,* 2016). During fall (October to December) and spring (April to June), harbor porpoises are widely dispersed from New Jersey to Maine, with lower densities farther north and south (LaBrecque *et al.,* 2015).

Based on stranding reports, passive acoustic recorders, and shipboard surveys, harbor porpoise occur in coastal waters primarily in winter and spring months, but there is little information on their presence in the Chesapeake Bay. They do not appear to be abundant in the NAVSTA Norfolk area in most years, but this is confounded by wide variations in stranding occurrences over the past decade. In the recent HRBT project, zero harbor porpoises were observed near the project area (HRCP, *Unpublished*).

Harbor Seal

The Western North Atlantic stock of harbor seals occurs in the project area. Harbor seal distribution along the U.S. Atlantic coast has shifted in recent years, with an increased number of seals reported from southern New England to the mid-Atlantic region (DiGiovanni *et al.,* 2011; Hayes *et al.,* 2017; Kenney R. D. 2019; Waring *et al.,* 2016). Regular sightings of seals in Virginia have become a common occurrence in winter and early spring (Costidis *et al.,* 2019). Winter haulout sites for harbor seals have been documented in the Chesapeake Bay at the CBBT, on the Virginia Eastern Shore, and near Oregon Inlet, North Carolina (Waring *et al.,* 2016; Rees *et al.,* 2016; Jones *et al.,* 2018).

Harbor seals regularly haul out on rocks around the portal islands of the CBBT and on mud flats on the nearby southern tip of the Eastern Shore from December through April (Rees *et al.,* 2016; Jones *et al.,* 2018). Seals captured in 2018 on the Eastern Shore and tagged with satellite-tracked tags that lasted from 2 to 5 months spent at least 60 days in Virginia waters before departing the area. All tagged seals returned regularly to the capture site while in Virginia waters, but individuals utilized offshore and Chesapeake Bay waters to different extents (Ampela *et al.,* 2019). The area that was utilized most heavily was near the Eastern Shore capture site, but some seals ranged into the Chesapeake Bay. To supplement this information, the HRBT project reported seeing zero seals in or around the project area (HRCP, *Unpublished)*.

Gray Seal

The Western North Atlantic stock of gray seal occurs in the project area. The western North Atlantic stock is centered in Canadian waters, including the Gulf of St. Lawrence and the Atlantic coasts of Nova Scotia, Newfoundland, and Labrador, Canada, and the northeast U.S. continental shelf (Hayes *et al.,* 2017). Gray seals range south into the northeastern United States, with strandings and sightings as far south as North Carolina (Hammill *et al.,* 1998; Waring *et al.,* 2004). Gray seal distribution along the U.S. Atlantic coast has shifted in recent years, with an increased number of seals reported in southern New England (DiGiovanni *et al.,* 2011; Kenney R.D., 2019; Waring *et al.,* 2016). Recent sightings included a gray seal in the lower Chesapeake Bay during the winter of 2014 to 2015 (Rees *et al.,* 2016). Along the coast of the United States, gray seals are known to pup at three or more colonies in Massachusetts and Maine.

Gray seals are uncommon in Virginia and in the Chesapeake Bay. Only 15 gray seal strandings were documented in Virginia from 1988 through 2013 (Barco and Swingle, 2014). They are rarely found resting on the rocks around the portal islands of the CBBT from December through April alongside harbor seals. Seal observation surveys conducted at the CBBT recorded one gray seal in each of the 2014/2015 and 2015/2016 seasons while no gray seals were reported during the 2016/2017 and 2017/2018 seasons (Rees *et al.,* 2016, Jones *et al.,* 2018). Sightings have been reported off Virginia and near the project area during the winter and spring (Barco 2013; Rees *et al.,* 2016; Jones *et al.,* 2018; Ampela *et al.,* 2019). However, the HRBT monitoring report indicated that zero gray seals were observed during the course of their project (HRCP, *Unpublished).*

Unusual Mortality Events

An unusual mortality event (UME) is defined under Section 410(6) of the MMPA as a stranding that is unexpected; involves a significant die-off of any marine mammal population; and demands immediate response. Currently, ongoing UME investigations are underway for pinnipeds along the Northeast Atlantic coast. There is an active UME for humpback whales along the Atlantic coast.

Northeast Pinniped UME

Since July 2018, elevated numbers of harbor seal and gray seal mortalities have occurred across Maine, New Hampshire and Massachusetts. This event has been declared an UME. Additionally, seals showing clinical signs have been stranding as far south as Virginia, although not in elevated numbers; therefore, the UME investigation now encompasses all seal strandings from Maine to Virginia. Lastly, while take is not proposed for these species in this proposed IHA, ice seals (harp and hooded seals) have also started stranding with clinical signs, again not in elevated numbers, and those two seal species have also been added to the UME investigation. Additional information is available at *https://www.fisheries.noaa.gov/new-england-mid-atlantic/marine-life-distress/2018-2020-pinniped-unusual-mortality-event-along.*

Atlantic Humpback Whale UME

Since January 2016, elevated humpback whale mortalities have occurred along the Atlantic coast from Maine through Florida. This event has been declared an UME since 2017. A portion of the whales have shown evidence of pre-mortem vessel strike; however, this finding is not consistent across all whales examined, and additional research is needed. Additional information is available at *https://www.fisheries.noaa.gov/national/marine-life-distress/2016-2021-humpback-whale-unusual-mortality-event-along-atlantic-coast*.

Marine Mammal Hearing

Hearing is the most important sensory modality for marine mammals underwater, and exposure to anthropogenic sound can have deleterious effects. To appropriately assess the potential effects of exposure to sound, it is necessary to understand the frequency ranges marine mammals are able to hear. Current data indicate that not all marine mammal species have equal hearing capabilities (*e.g.*, Richardson *et al.,* 1995; Wartzok and Ketten, 1999; Au and Hastings, 2008). To reflect this, Southall *et al.,* (2007) recommended that marine mammals be divided into functional hearing groups based on directly measured or estimated hearing ranges on the basis of available behavioral response data, audiograms derived using auditory evoked potential techniques, anatomical modeling, and other data. Note that no direct measurements of hearing ability have been successfully completed for mysticetes (*i.e.*, low-frequency cetaceans). Subsequently, NMFS (2018) described generalized hearing ranges for these marine mammal hearing groups. Generalized hearing ranges were chosen based on the approximately 65 decibel (dB) threshold from the normalized composite audiograms, with the exception for lower limits for low-frequency cetaceans where the lower bound was deemed to be biologically implausible and the lower bound from Southall *et al.,* (2007) retained. Marine mammal hearing groups and their associated hearing ranges are provided in Table 3.

Table 3. Marine Mammal Hearing Groups (NMFS, 2018).

Hearing Group	Generalized Hearing Range*
Low-frequency (LF) cetaceans (baleen whales)	7 Hz to 35 kHz
Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)	150 Hz to 160 kHz
High-frequency (HF) cetaceans (true porpoises, *Kogia*, river dolphins, cephalorhynchid, *Lagenorhynchus cruciger* & *L. australis*)	275 Hz to 160 kHz
Phocid pinnipeds (PW) (underwater) (true seals)	50 Hz to 86 kHz
Otariid pinnipeds (OW) (underwater) (sea lions and fur seals)	60 Hz to 39 kHz

* Represents the generalized hearing range for the entire group as a composite (*i.e.,* all species within the group), where individual species' hearing ranges are typically not as broad. Generalized hearing range chosen based on ~65 dB threshold from normalized composite audiogram, with the exception for lower limits for LF cetaceans (Southall *et al.,* 2007) and PW pinniped (approximation).

The pinniped functional hearing group was modified from Southall *et al.,* (2007) on the basis of data indicating that phocid species have consistently demonstrated an extended frequency range of hearing compared to otariids, especially in the higher frequency range (Hemilä *et al*., 2006; Kastelein *et al*., 2009; Reichmuth and Holt, 2013).

For more detail concerning these groups and associated frequency ranges, please see NMFS (2018) for a review of available information. Five marine mammal species (three cetacean and two pinniped, both phocid, species) have the reasonable potential to co-occur with the proposed survey activities. Please refer to Table 2. Of the cetacean species that may be present, one is classified as a low-frequency cetacean (*i.e*., humpback whale), one is classified as a mid-frequency cetacean (*i.e*., bottlenose dolphin), and one is classified as a high-frequency cetacean (*i.e*., harbor porpoise).

Potential Effects of Specified Activities on Marine Mammals and their Habitat

This section includes a summary and discussion of the ways that components of the specified activity may impact marine mammals and their habitat. The **Estimated Take** section later in this document includes a quantitative analysis of the number of individuals that are expected to be taken by this activity. The **Negligible Impact Analysis and Determination** section considers the content of this section, the **Estimated**

Take section, and the **Proposed Mitigation** section, to draw conclusions regarding the likely impacts of these activities on the reproductive success or survivorship of individuals and how those impacts on individuals are likely to impact marine mammal species or stocks.

Description of Sound Sources

The marine soundscape is comprised of both ambient and anthropogenic sounds. Ambient sound is defined as the all-encompassing sound in a given place and is usually a composite of sound from many sources both near and far. The sound level of an area is defined by the total acoustical energy being generated by known and unknown sources. These sources may include physical (*e.g.*, waves, wind, precipitation, earthquakes, ice, atmospheric sound), biological (*e.g.*, sounds produced by marine mammals, fish, and invertebrates), and anthropogenic sound (*e.g.*, vessels, dredging, aircraft, construction).

The sum of the various natural and anthropogenic sound sources at any given location and time—which comprise "ambient" or "background" sound—depends not only on the source levels (as determined by current weather conditions and levels of biological and shipping activity) but also on the ability of sound to propagate through the environment. In turn, sound propagation is dependent on the spatially and temporally varying properties of the water column and sea floor, and is frequency-dependent. As a result of the dependence on a large number of varying factors, ambient sound levels can be expected to vary widely over both coarse and fine spatial and temporal scales. Sound levels at a given frequency and location can vary by 10-20 dB from day to day (Richardson *et al.,* 1995). The result is that, depending on the source type and its intensity, sound from the specified activity may be a negligible addition to the local environment or could form a distinctive signal that may affect marine mammals.

In-water construction activities associated with the project would include vibratory pile removal, impact and vibratory pile driving, and drilling. The sounds produced by these activities fall into one of two general sound types: Impulsive and non-impulsive. Impulsive sounds (*e.g.*, explosions, gunshots, sonic booms, impact pile driving) are typically transient, brief (less than 1 second), broadband, and consist of high peak sound pressure with rapid rise time and rapid decay (ANSI 1986; NIOSH 1998; ANSI 2005; NMFS 2018a). Non-impulsive sounds (*e.g.* aircraft, machinery operations such as drilling or dredging, vibratory pile driving, and active sonar systems) can be broadband, narrowband or tonal, brief or prolonged (continuous or intermittent), and typically do not have the high peak sound pressure with raid rise/decay time that impulsive sounds do (ANSI 1995; NIOSH 1998; NMFS 2018a). The distinction between these two sound types is important because they have differing potential to cause physical effects, particularly with regard to hearing (*e.g.*, Ward 1997 in Southall *et al.,* 2007).

Impact hammers operate by repeatedly dropping a heavy piston onto a pile to drive the pile into the substrate. Sound generated by impact hammers is characterized by rapid rise times and high peak levels, a potentially injurious combination (Hastings and Popper 2005). Vibratory hammers install piles by vibrating them and allowing the weight of the hammer to push them into the sediment. The vibrations produced also cause liquefaction of the substrate surrounding the pile, enabling the pile to be extracted or driven into the ground more easily. Vibratory hammers produce significantly less sound than impact hammers. Peak sound pressure levels (SPLs) may be 180 dB or greater, but are generally 10 to 20 dB lower than SPLs generated during impact pile driving of the same-sized pile (Oestman *et al.,* 2009). Rise time is slower, reducing the probability and severity of injury, and sound energy is distributed over a greater amount of time (Nedwell and Edwards 2002; Carlson *et al.,* 2005). As mentioned previously, drilling is considered a continuous source, similar to vibratory pile driving. The drilling may be used before driving piles in order to facilitate pile driving and hence the applicant calls this activity “pre-drilling” in their application. For the proposed project, the drilling apparatus utilized would vary depending on the different applications during in-water construction activities. Drilling would be used as necessary to remove sand with shell fragments or any obstructions in order to accelerate pile driving.

The likely or possible impacts of the Navy's proposed activity on marine mammals could involve both non-acoustic and acoustic stressors. Potential non-acoustic stressors could result from the physical presence of the equipment and personnel; however, any impacts to marine mammals are expected to be primarily acoustic in nature. Acoustic stressors include effects of heavy equipment operation during pile driving, removal and drilling.

Acoustic Impacts

The introduction of anthropogenic noise into the aquatic environment from pile driving or drilling is the primary means by which marine mammals may be harassed from the Navy's specified activity. In general, animals exposed to natural or anthropogenic sound may experience physical and psychological effects, ranging in magnitude from none to severe (Southall *et al.,* 2007). In general, exposure to pile driving or drilling noise has the potential to result in auditory threshold shifts and behavioral reactions (*e.g.*, avoidance, temporary cessation of foraging and vocalizing, changes in dive behavior). Exposure to anthropogenic noise can also lead to non-observable physiological responses such an increase in stress hormones. Additional noise in a marine mammal's habitat can mask acoustic cues used by marine mammals to carry out daily functions such as communication and predator and prey detection. The effects of pile driving or drilling noise on marine mammals are dependent on several factors, including, but not limited to, sound type (*e.g.*, impulsive vs. non-impulsive), the species, age and sex class (*e.g.*, adult male vs. mom with calf), duration of exposure, the distance between the pile and the animal, received levels, behavior at time of exposure, and previous history with exposure

(Wartzok *et al.,* 2004; Southall *et al.,* 2007). Here we discuss physical auditory effects (threshold shifts) followed by behavioral effects and potential impacts on habitat.

NMFS defines a noise-induced threshold shift (TS) as a change, usually an increase, in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level (NMFS 2018). The amount of threshold shift is customarily expressed in decibels (dB). A TS can be permanent or temporary. As described in NMFS (2018), there are numerous factors to consider when examining the consequence of TS, including, but not limited to, the signal temporal pattern (*e.g.*, impulsive or non-impulsive), likelihood an individual would be exposed for a long enough duration or to a high enough level to induce a TS, the magnitude of the TS, time to recovery (seconds to minutes or hours to days), the frequency range of the exposure (*i.e.*, spectral content), the hearing and vocalization frequency range of the exposed species relative to the signal's frequency spectrum (*i.e.*, how an animal uses sound within the frequency band of the signal; *e.g.*, Kastelein *et al.,* 2014), and the overlap between the animal and the source (*e.g.*, spatial, temporal, and spectral).

Permanent Threshold Shift (PTS)—NMFS defines PTS as a permanent, irreversible increase in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level (NMFS 2018). Available data from humans and other terrestrial mammals indicate that a 40 dB threshold shift approximates PTS onset (see Ward *et al.,* 1958, 1959; Ward 1960; Kryter *et al.,* 1966; Miller 1974; Ahroon *et al.,* 1996; Henderson *et al.,* 2008). PTS levels for marine mammals are estimates, as with the exception of a single study unintentionally inducing PTS in a harbor seal (Kastak *et al.,* 2008), there are no empirical data measuring PTS in marine mammals largely due to the fact that, for various ethical reasons, experiments involving anthropogenic noise exposure at levels inducing PTS are not typically pursued or authorized (NMFS 2018).

Temporary Threshold Shift (TTS)—TTS is a temporary, reversible increase in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level (NMFS 2018). Based on data from cetacean TTS measurements (see Southall *et al.,* 2007), a TTS of 6 dB is considered the minimum threshold shift clearly larger than any day-to-day or session-to-session variation in a subject's normal hearing ability (Schlundt *et al.,* 2000; Finneran *et al.,* 2000, 2002). As described in Finneran (2015), marine mammal studies have shown the amount of TTS increases with cumulative sound exposure level (SELcum) in an accelerating fashion: At low exposures with lower SELcum, the amount of TTS is typically small and the growth curves have shallow slopes. At exposures with higher SELcum, the growth curves become steeper and approach linear relationships with the noise SEL.

Depending on the degree (elevation of threshold in dB), duration (*i.e.*, recovery time), and frequency range of TTS, and the context in which it is experienced, TTS can have effects on marine mammals ranging from discountable to serious (similar to those discussed in auditory masking, below). For example, a marine mammal may be able to readily compensate for a brief, relatively small amount of TTS in a non-critical frequency range that takes place during a time when the animal is traveling through the open ocean, where ambient noise is lower and there are not as many competing sounds present. Alternatively, a larger amount and longer duration of TTS sustained during a time when communication is critical for successful mother/calf interactions could have more serious impacts. We note that reduced hearing sensitivity as a simple function of aging has been observed in marine mammals, as well as humans and other taxa (Southall *et al.,* 2007), so we can infer that strategies exist for coping with this condition to some degree, though likely not without cost.

Currently, TTS data only exist for four species of cetaceans (bottlenose dolphin, beluga whale (*Delphinapterus leucas*), harbor porpoise, and Yangtze finless porpoise (*Neophocoena asiaeorientalis*)) and five species of pinnipeds exposed to a limited number of sound sources (*i.e.*, mostly tones and octave-band noise) in laboratory settings (Finneran 2015). TTS was not observed in trained spotted (*Phoca largha*) and ringed (*Pusa hispida*) seals exposed to impulsive noise at levels matching previous predictions of TTS onset (Reichmuth *et al.,* 2016). In general, harbor seals and harbor porpoises have a lower TTS onset than other measured pinniped or cetacean species (Finneran 2015). Additionally, the existing marine mammal TTS data come from a limited number of individuals within these species. No data are available on noise-induced hearing loss for mysticetes. For summaries of data on TTS in marine mammals or for further discussion of TTS onset thresholds, please see Southall *et al.,* (2007), Finneran and Jenkins (2012), Finneran (2015), and Table 5 in NMFS (2018). Installing piles for this project requires a combination of drilling, impact pile driving and vibratory pile driving. For this project, these activities would not occur at the same time and there would be pauses in activities producing the sound during each day. Given these pauses and that many marine mammals are likely moving through the ensonified area and not remaining for extended periods of time, the potential for TS declines.

Behavioral Harassment—Exposure to noise from pile driving and removal also has the potential to behaviorally disturb marine mammals. Available studies show wide variation in response to underwater sound; therefore, it is difficult to predict specifically how any given sound in a particular instance might affect marine mammals perceiving the signal. If a marine mammal does react briefly to an underwater sound by changing its behavior or moving a small distance, the impacts of the change are unlikely to be significant to the individual, let alone the stock or population. However, if a sound source displaces marine mammals from an important feeding or breeding area for a prolonged period, impacts on individuals and populations could be significant (*e.g.*, Lusseau and Bejder 2007; Weilgart 2007; NRC 2005).

Disturbance may result in changing durations of surfacing and dives, number of blows per surfacing, or moving direction and/or speed; reduced/increased vocal activities; changing/cessation of certain behavioral activities (such as socializing or feeding); visible startle response or aggressive behavior (such as tail/fluke slapping or jaw clapping); avoidance of areas where sound sources are located. Pinnipeds may increase their haul out time, possibly to avoid in-water disturbance (Thorson and Reyff 2006). Behavioral responses to sound are highly variable and context-specific and any reactions depend on numerous intrinsic and extrinsic factors (*e.g.*, species, state of maturity, experience, current activity, reproductive state, auditory sensitivity, time of day), as well as the interplay between factors (*e.g.*, Richardson *et al.,* 1995; Wartzok *et al.,* 2003; Southall *et al.,* 2007; Weilgart 2007; Archer *et al.,* 2010). Behavioral reactions can vary not only among individuals but also within an individual, depending on previous experience with a sound source, context, and numerous other factors (Ellison *et al.,* 2012), and can vary depending on characteristics associated with the sound source (*e.g.*, whether it is moving or stationary, number of sources, distance from the source). In general, pinnipeds seem more tolerant of, or at least habituate more quickly to, potentially disturbing underwater sound than do cetaceans, and generally seem to be less responsive to exposure to industrial sound than most cetaceans. Please see Appendices B-C of Southall *et al.,* (2007) for a review of studies involving marine mammal behavioral responses to sound.

Disruption of feeding behavior can be difficult to correlate with anthropogenic sound exposure, so it is usually inferred by observed displacement from known foraging areas, the appearance of secondary indicators (*e.g.*, bubble nets or sediment plumes), or changes in dive behavior. As for other types of behavioral response, the frequency, duration, and temporal pattern of signal presentation, as well as differences in species sensitivity, are likely contributing factors to differences in response in any given circumstance (*e.g.*, Croll *et al.,* 2001; Nowacek *et al.,* 2004; Madsen *et al.,* 2006; Yazvenko *et al.,* 2007). A determination of whether foraging disruptions incur fitness consequences would require information on or estimates of the energetic requirements of the affected individuals and the relationship between prey availability, foraging effort and success, and the life history stage of the animal.

Stress responses – An animal's perception of a threat may be sufficient to trigger stress responses consisting of some combination of behavioral responses, autonomic nervous system responses, neuroendocrine responses, or immune responses (*e.g.*, Seyle 1950; Moberg 2000). In many cases, an animal's first and sometimes most economical (in terms of energetic costs) response is behavioral avoidance of the potential stressor. Autonomic nervous system responses to stress typically involve changes in heart rate, blood pressure, and gastrointestinal activity. These responses have a relatively short duration and may or may not have a significant long-term effect on an animal's fitness.

Neuroendocrine stress responses often involve the hypothalamus-pituitary-adrenal system. Virtually all neuroendocrine functions that are affected by stress – including immune competence, reproduction, metabolism, and behavior – are regulated by pituitary hormones. Stress-induced changes in the secretion of pituitary hormones have been implicated in failed reproduction, altered metabolism, reduced immune competence, and behavioral disturbance (*e.g.*, Moberg 1987; Blecha 2000). Increases in the circulation of glucocorticoids are also equated with stress (Romano *et al.,* 2004).

The primary distinction between stress (which is adaptive and does not normally place an animal at risk) and "distress" is the cost of the response. During a stress response, an animal uses glycogen stores that can be quickly replenished once the stress is alleviated. In such circumstances, the cost of the stress response would not pose serious fitness consequences. However, when an animal does not have sufficient energy reserves to satisfy the energetic costs of a stress response, energy resources must be diverted from other functions. This state of distress will last until the animal replenishes its energetic reserves sufficient to restore normal function.

Relationships between these physiological mechanisms, animal behavior, and the costs of stress responses are well studied through controlled experiments and for both laboratory and free-ranging animals (*e.g.*, Holberton *et al.,* 1996; Hood *et al.,* 1998; Jessop *et al.,* 2003; Krausman *et al.,* 2004; Lankford *et al.,* 2005). Stress responses due to exposure to anthropogenic sounds or other stressors and their effects on marine mammals have also been reviewed (Fair and Becker 2000; Romano *et al.,* 2002b) and, more rarely, studied in wild populations (*e.g.*, Romano *et al.,* 2002a). For example, Rolland *et al.,* (2012) found that noise reduction from reduced ship traffic in the Bay of Fundy was associated with decreased stress in North Atlantic right whales. These and other studies lead to a reasonable expectation that some marine mammals will experience physiological stress responses upon exposure to acoustic stressors and that it is possible that some of these would be classified as “distress.” In addition, any animal experiencing TTS would likely also experience stress responses (NRC, 2003), however distress is an unlikely result of this project based on observations of marine mammals during previous, similar projects in the area.

Masking—Sound can disrupt behavior through masking, or interfering with, an animal's ability to detect, recognize, or discriminate between acoustic signals of interest (*e.g.*, those used for intraspecific communication and social interactions, prey detection, predator avoidance, navigation) (Richardson *et al.,* 1995). Masking occurs when the receipt of a sound is interfered with by another coincident sound at similar frequencies and at similar or higher intensity, and may occur whether the sound is natural (*e.g.*, snapping shrimp, wind, waves, precipitation) or anthropogenic (*e.g.*, pile driving, shipping, sonar, seismic exploration) in origin. The ability of a noise source to mask biologically important sounds depends on the characteristics of both the noise source and the signal of interest (*e.g.*, signal-to-noise ratio, temporal variability, direction), in relation to each other and to an animal's hearing abilities (*e.g.*, sensitivity, frequency range, critical ratios, frequency discrimination, directional discrimination, age or TTS hearing loss), and existing ambient noise and propagation conditions. Masking of natural sounds can result when human activities produce high levels of background sound at frequencies important to marine mammals. Conversely, if the background level of underwater sound is high (*e.g.* on a day with strong wind and high waves), an anthropogenic sound source would not be detectable as far away as would be possible under quieter conditions and would itself be masked.

Airborne Acoustic Effects—Although pinnipeds are known to haul-out regularly on man-made objects, such as the nearby Chesapeake Bay Bridge Tunnel, we believe that incidents of take resulting solely from airborne sound are unlikely due to the sheltered proximity between the proposed project area and these haulout sites (over 16 miles (26 km)). There is a possibility that an animal could surface in-water, but with head out, within the area in which airborne sound exceeds relevant thresholds and thereby be exposed to levels of airborne sound that we associate with harassment, but any such occurrence would likely be accounted for in our estimation of incidental take from underwater sound. Therefore, authorization of incidental take resulting from airborne sound for pinnipeds is not warranted, and airborne sound is not discussed further here. Cetaceans are not expected to be exposed to airborne sounds that would result in harassment as defined under the MMPA.

Marine Mammal Habitat Effects

The Navy's construction activities could have localized, temporary impacts on marine mammal habitat by increasing in-water sound pressure levels and slightly decreasing water quality. However, since the focus of the proposed action is pile driving and drilling, no net habitat loss is expected as the new Pier 3 will be immediately north of the existing Pier 3 and once complete, the current Pier 3 will be demolished. Construction activities are of short duration and would likely have temporary impacts on marine mammal habitat through increases in underwater sounds. Increased noise levels may affect acoustic habitat (see masking discussion above) and adversely affect marine mammal prey in the vicinity of the project area (see discussion below). During pile driving activities, elevated levels of underwater noise would ensonify the project area where both fishes and marine mammals may occur and could affect foraging success. Additionally, marine mammals may avoid the area during construction, however displacement due to noise is expected to be temporary and is not expected to result in long-term effects to the individuals or populations.

Temporary and localized reduction in water quality will occur because of in-water construction activities as well. Most of this effect will occur during the installation and removal of piles when bottom sediments are disturbed. The installation of piles will disturb bottom sediments and may cause a temporary increase in suspended sediment in the project area. In general, turbidity associated with pile installation is localized to about 25-ft (7.6 meter) radius around the pile (Everitt *et al.,* 1980). Cetaceans are not expected to be close enough to the pile driving areas to experience effects of turbidity, and any pinnipeds could avoid localized areas of turbidity. Therefore, we expect the impact from increased turbidity levels to be discountable to marine mammals and do not discuss it further.

In-Water Construction Effects on Potential Foraging Habitat

The proposed activities would not result in permanent impacts to habitats used directly by marine mammals except for the actual footprint of the new Pier 3. The total seafloor area affected by pile installation and removal is a very small area compared to the vast foraging area available to marine mammals in the project area and lower Chesapeake Bay. Pile extraction and installation may have impacts on benthic invertebrate species primarily associated with disturbance of sediments that may cover or displace some invertebrates. The impacts will be temporary and highly localized, and no habitat will be permanently displaced by construction. Therefore, it is expected that impacts on foraging opportunities for marine mammals due to the demolition and reconstruction of Pier 3 would be minimal.

It is possible that avoidance by potential prey (*i.e.,* fish) in the immediate area may occur due to temporary loss of this foraging habitat. The duration of fish avoidance of this area after pile driving stops is unknown, but we anticipate a rapid return to normal recruitment, distribution and behavior. Any behavioral avoidance by fish of the disturbed area would still leave large areas of fish and marine mammal foraging habitat in the nearby vicinity in the in the project area and lower Chesapeake Bay.

Effects on Potential Prey

Sound may affect marine mammals through impacts on the abundance, behavior, or distribution of prey species (*e.g.,* fish). Marine mammal prey varies by species, season, and location. Here, we describe studies regarding the effects of noise on known marine mammal prey.

Fish utilize the soundscape and components of sound in their environment to perform important functions such as foraging, predator avoidance, mating, and spawning (*e.g.*, Zelick *et al.,* 1999; Fay, 2009). Depending on their hearing anatomy and peripheral sensory structures, which vary among species, fishes hear sounds using pressure and particle motion sensitivity capabilities and detect the motion of surrounding water (Fay *et* *al.,* 2008). The potential effects of noise on fishes depends on the overlapping frequency range, distance from the sound source, water depth of exposure, and species-specific hearing sensitivity, anatomy, and physiology. Key impacts to fishes may include behavioral responses, hearing damage, barotrauma (pressure-related injuries), and mortality.

Fish react to sounds which are especially strong and/or intermittent low-frequency sounds, and behavioral responses such as flight or avoidance are the most likely effects. Short duration, sharp sounds can cause overt or subtle changes in fish behavior and local distribution. The reaction of fish to noise depends on the physiological state of the fish, past exposures, motivation (*e.g.*, feeding, spawning, migration), and other environmental factors. Hastings and Popper (2005) identified several studies that suggest fish may relocate to avoid certain areas of sound energy. Additional studies have documented effects of pile driving on fish, although several are based on studies in support of large, multiyear bridge construction projects (*e.g.*, Scholik and Yan, 2001, 2002; Popper and Hastings, 2009). Several studies have demonstrated that impulse sounds might affect the distribution and behavior of some fishes, potentially impacting foraging opportunities or increasing energetic costs (*e.g.*, Fewtrell and McCauley, 2012; Pearson *et al.,* 1992; Skalski *et al.,* 1992; Santulli *et al.,* 1999; Paxton *et al.,* 2017). However, some studies have shown no or slight reaction to impulse sounds (*e.g.*, Pena *et al.,* 2013; Wardle *et al.,* 2001; Jorgenson and Gyselman, 2009; Cott *et al.,* 2012).

SPLs of sufficient strength have been known to cause injury to fish and fish mortality. However, in most fish species, hair cells in the ear continuously regenerate and loss of auditory function likely is restored when damaged cells are replaced with new cells. Halvorsen *et al.,* (2012a) showed that a TTS of 4-6 dB was recoverable within 24 hours for one species. Impacts would be most severe when the individual fish is close to the source and when the duration of exposure is long. Injury caused by barotrauma can range from slight to severe and can cause death, and is most likely for fish with swim bladders. Barotrauma injuries have been documented during controlled exposure to impact pile driving (Halvorsen *et al.,* 2012b; Casper *et al.,* 2013).

The most likely impact to fish from pile driving activities at the project areas would be temporary behavioral avoidance of the area. The duration of fish avoidance of an area after pile driving stops is unknown, but a rapid return to normal recruitment, distribution and behavior is anticipated.

The area impacted by the project is relatively small compared to the available habitat in the remainder of the project area and the lower Chesapeake Bay, and there are no areas of particular importance that would be impacted by this project. Any behavioral avoidance by fish of the disturbed area would still leave significantly large areas of fish and marine mammal foraging habitat in the nearby vicinity. As described in the preceding, the potential for the Navy's construction to affect the availability of prey to marine mammals or to meaningfully impact the quality of physical or acoustic habitat is considered to be insignificant.

Estimated Take

This section provides an estimate of the number of incidental takes proposed for authorization through this IHA, which will inform both NMFS' consideration of "small numbers" and the negligible impact determination.

Harassment is the only type of take expected to result from these activities. Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines "harassment" as any act of pursuit, torment, or annoyance, which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

Authorized takes would primarily be by Level B harassment, as noise generated from in-water pile driving (vibratory and impact) and drilling has the potential to result in disruption of behavioral patterns for individual marine mammals. There is also some potential for auditory injury (Level A harassment) to result, primarily for high- and low-frequency species and phocids because predicted auditory injury zones are larger than for mid-frequency species. However, auditory injury is unlikely to occur for mid-frequency species due to the proposed shutdown zones (see **Proposed Mitigation** section). Additionally, the proposed mitigation and monitoring measures are expected to minimize the severity of the taking to the extent practicable.

As described previously, no mortality is anticipated or proposed to be authorized for this activity. Below we describe how the take is estimated.

Generally speaking, we estimate take by considering: (1) acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment; (2) the area or volume of water that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) and the number of days of activities. We note that while these basic factors can contribute to a basic calculation to provide an initial prediction of takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.,* previous monitoring results or average group size). Below, we describe the factors considered here in more detail and present the proposed take estimate.

Acoustic Thresholds

NMFS recommends the use of acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals would be reasonably expected to be behaviorally harassed (equated to Level B harassment) or to incur PTS of some degree (equated to Level A harassment).

Level B Harassment for non-explosive sources – Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source (*e.g.*, frequency, predictability, duty cycle), the environment (*e.g.*, bathymetry), and the receiving animals (hearing, motivation, experience, demography, behavioral context) and can be difficult to predict (Southall *et al.,* 2007, Ellison *et al.,* 2012). Based on what the available science indicates and the practical need to use a threshold based on a factor that is both predictable and measurable for most activities, NMFS uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS predicts that marine mammals are likely to be behaviorally harassed in a manner we consider Level B harassment when exposed to underwater anthropogenic noise above received levels of 120 dB re 1 microPascal, root mean square (μPa (rms)) for continuous (*e.g.,* vibratory pile-driving, drilling) and above 160 dB re 1 μPa (rms) for non-explosive impulsive (*e.g.*, impact pile driving) or intermittent (*e.g.*, scientific sonar) sources.

The Navy's construction includes the use of continuous (vibratory pile driving, drilling) and impulsive (impact pile driving) sources, and therefore the 120 and 160 dB re 1 μPa (rms) are applicable.

Level A harassment for non-explosive sources - NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) (Technical Guidance, 2018) identifies dual criteria to assess auditory injury (Level A harassment) to five different marine mammal groups (based on hearing sensitivity) as a result of exposure to noise from two different types of sources (impulsive or non-impulsive). As previously noted, the Navy's proposed activity include the use of impulsive (impact pile driving) and non-impulsive (vibratory pile driving/removal, drilling) sources.

These thresholds are provided in the table below. The references, analysis, and methodology used in the development of the thresholds are described in NMFS 2018 Technical Guidance, which may be accessed at *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance*.

Table 4. Thresholds Identifying the Onset of Permanent Threshold Shift

	PTS Onset Acoustic Thresholds* **(Received Level)**	
Hearing Group	**Impulsive**	**Non-impulsive**
Low-Frequency (LF) Cetaceans	*Cell 1* $L_{pk,flat}$: 219 dB $L_{E,LF,24h}$: 183 dB	*Cell 2* $L_{E,LF,24h}$: 199 dB
Mid-Frequency (MF) Cetaceans	*Cell 3* $L_{pk,flat}$: 230 dB $L_{E,MF,24h}$: 185 dB	*Cell 4* $L_{E,MF,24h}$: 198 dB
High-Frequency (HF) Cetaceans	*Cell 5* $L_{pk,flat}$: 202 dB $L_{E,HF,24h}$: 155 dB	*Cell 6* $L_{E,HF,24h}$: 173 dB
Phocid Pinnipeds (PW) (Underwater)	*Cell 7* $L_{pk,flat}$: 218 dB $L_{E,PW,24h}$: 185 dB	*Cell 8* $L_{E,PW,24h}$: 201 dB
Otariid Pinnipeds (OW) (Underwater)	*Cell 9* $L_{pk,flat}$: 232 dB $L_{E,OW,24h}$: 203 dB	*Cell 10* $L_{E,OW,24h}$: 219 dB

* Dual metric acoustic thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating PTS onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level thresholds associated with impulsive sounds, these thresholds should also be considered.

Note: Peak sound pressure (L_{pk}) has a reference value of 1 μPa, and cumulative sound exposure level (L_E) has a reference value of 1μPa^{2}s. In this Table, thresholds are abbreviated to reflect American National Standards Institute standards (ANSI 2013). However, peak sound pressure is defined by ANSI as incorporating frequency weighting, which is not the intent for this Technical Guidance. Hence, the subscript "flat" is being included to indicate peak sound pressure should be flat weighted or unweighted within the generalized hearing range. The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The cumulative sound exposure level thresholds could be exceeded in a multitude of ways (*i.e.*, varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these acoustic thresholds will be exceeded.

Ensonified Area

Here, we describe operational and environmental parameters of the activity that will feed into identifying the area ensonified above the acoustic thresholds, which include source levels and transmission loss coefficient.

In order to calculate the distances to the Level A harassment and the Level B harassment sound thresholds for the methods and piles being used in this project, NMFS used acoustic monitoring data from other locations to develop proxy source levels for the various pile types, sizes and methods (Table 5). Generally we choose source levels from similar pile types from locations (*e.g.*, geology, bathymetry) similar to the project. At this time, NMFS is not aware of reliable source levels available for polymeric piles using vibratory pile installation, therefore source levels for timber pile driving were used as a proxy. Similarly, the following proxies were used as source levels for piles where no data was available: source levels for the 66-inch steel pile was used as a proxy for 42-inch steel pipe piles (vibratory); the 30-inch steel pile was used as a proxy for the 28-inch sheet piles (impact); and 18-inch octagonal pile was used as a proxy for 18-inch concrete piles (impact). Additionally, data on vibratory extraction of concrete piles are not available, therefore the Navy followed previous guidance suggesting that timber piles be used as a proxy for sound source levels (see 84 FR 28474; June 19, 2019).

Very little information is available regarding source levels for in-water drilling activities associated with nearshore pile installation. Measurements made during a pile drilling project in 1-5 m (3-16 ft) depths at Santa Rosa Island, CA, by Dazey *et al.,* (2012) appear to provide the best available proxy source levels for the proposed activities. Dazey *et al.* (2012) reported average rms source levels ranging from 151 to 157 dB re 1μPa, normalized to a distance of 1 m (3 ft) from the pile, during activities that included casing removal and installation as well as drilling, with an average of 154 dB re 1μPa during 62 days that spanned all related drilling activities during a single season. The sound field in the project area is the existing background noise plus additional construction noise from the proposed project. Marine mammals are expected to be affected via sound generated by the primary components of the project (*i.e.,* impact pile driving, vibratory pile driving, and drilling).

Table 5 – Project Sound Source Levels normalized to 10 meters.

Pile Type	Pile Size (inch)	Method	Peak SPL (re 1 μPa (rms))	RMS SPL (re 1 μPa (rms))	SEL (re 1 μPa (rms))	Source
Steel Pipe Pile	42	Impact	213	190	177	Navy 2015
		Vibratory	--	168	168	Sitka 2017
Steel Sheet	28	Impact	211	196	181	NAVFAC SW 2020
		Vibratory	--	167	167	Navy 2015
Concrete Pile	24	Impact	189	176	163	Illingworth and Rodkin 2017
		Vibratory	185	162	157	Caltrans 2020
Concrete Pile	18	Impact	185	166	154	Caltrans 2020
		Vibratory	185	162	157	Caltrans 2020
Polymeric Pile	13	Impact	177	153	--	Denes et al., 2016
		Vibratory	185	162	157	Caltrans 2020
Timber Pile	14	Vibratory	185	162	157	Caltrans 2020
NA	"Multiple pile sizes"[1,2]	Drilling	--	154[2]	154	Dazey *et al*., 2012

1. Pile sizes being installed using the drilling method might include 24-inch precast concrete square, 13-inch polymeric and 24-inch precast concrete square.
2. Source levels were normalized to a distance of 1 m (3 ft) from the pile during activities that included casing removal and installation as well as drilling, with an average of 154 dB re 1μPa during the course of the project.

When the NMFS Technical Guidance (2016) was published, in recognition of the fact that ensonified area/volume could be more technically challenging to predict because of the duration component in the new thresholds, we developed a User Spreadsheet that includes tools to help predict a simple isopleth that can be used in conjunction with marine mammal density or occurrence to help predict takes. We note that because of some of the assumptions included in the methods used for these tools, we anticipate that isopleths produced are typically going to be overestimates of some degree, which may result in some degree of overestimate of Level A harassment take. However, these tools offer the best way to predict appropriate isopleths when more sophisticated 3D modeling methods are not available, and NMFS continues to develop ways to quantitatively refine these tools, and will qualitatively address the output where appropriate. For stationary sources in-water pile driving/removal and drilling activities from the Navy's proposed project, NMFS User Spreadsheet predicts the distance at which, if a marine mammal remained at that distance the whole duration of the activity, it would incur PTS. Inputs used in the User Spreadsheet are reported in Table 1 and sources levels used in the User Spread are reported in Table 5, and the resulting isopleths are reported in Table 6 (Impact) and Table 7 (Vibratory and Drilling) below.

Table 6 – Level A and Level B Harassment Isopleths for Impact Pile Driving

		Level A- Radius to Isopleth (m)				Level B- Radius to Isopleth (m)	
Pile Driving Site	Source	LF Cetaceans	MF Cetaceans	HF Cetaceans	Phocids	Distance to Level B Threshold (m)	Area within Level B Threshold (km^2)[1]
Pier 4	24" Concrete Fender	143	5	170	76	117	<0.1
CEP-175	13" Polymeric	22	1	26	12	3	<0.1
Pier 3	24" Concrete Bearing	160	6	190	86	117	<0.1
CEP-176	42" Steel Pipe Bearing	934	33	1112	500	1000	0.4
	28" Steel Sheet	773	28	921	414	2512	2.4
CEP-102	42" Steel Pipe	1002	36	1193	536	1000	1.4
	28" Steel Sheet	773	28	921	414	2512	8.0

	24" Concrete Pile	143	5	170	76	117	<0.1
	18" Concrete Pile	36	1	43	19	25	<0.1

1. Area within the Level B threshold was calculated using geographic information system (GIS) data as determined by transmission loss modeling, accounting for land.

Table 7 – Level A and Level B Harassment Isopleths for Vibratory Pile Driving and Removal, and Pre-Drilling.

Pile Driving Site	Source	Level A- Radius to Isopleth (m)				Level B- Radius to Isopleth (m)	
		LF Cetaceans	MF Cetaceans	HF Cetaceans	Phocids	Level B- Radius to Isopleth (m)	Area within Level B Threshold (km^2)[1]
Pier 4	14" Timber (demolition)	20	2	30	12	6310	49.9
	24" Concrete (vibratory)	5	<1	4	<1	6310	97.8
	24" Concrete (drilling)	1	0	1	<1	1848	4.4
Pier 3T	16" and 18" Concrete (demolition)	20	2	30	12	6310	49.9
	14" Timber (demolition)	20	2	30	12	6310	49.9
CEP-175	13" Polymeric (vibratory)	18	2	27	11	6310	11.1
	13" Polymeric (drilling)	1	<1	1	<1	1848	4.4
CEP-176	42" Steel Pipe	80	7	118	49	15849[2]	46.0
	28" Steel Sheet	43	4	64	26	13594	39.9
CEP-102	42" Steel Pipe	80	7	118	49	15849	98.9
	28" Steel Sheet	43	4	64	26	13594	90.6
	24" Concrete (drilling)	1	0	1	<1	1848	4.4
	14" Timber	20	2	30	12	6310	49.9

	13" Polymeric	20	2	30	12	6310	49.9
	18" Concrete	20	2	29.7	12	6310	49.9

1. Area within the Level B threshold was calculated using geographic information system (GIS) data as determined by transmission loss modeling.
2. Note: This value is different than that listed in the application, due to a typographic error in the application. The correct maximum distance to 120 dB RMS threshold is 15,849 m as seen here.

The maximum distance to the Level A harassment threshold during construction would be during the impact driving of 42-inch steel pipe piles at CEP-102 (1193 m for harbor porpoise; 1001 m for humpback whale; 35.6 m for bottlenose dolphin; and 536 m for pinnipeds). The largest calculated Level B harassment zone extends out to 15,849 m, which would result from the vibratory installation of the 42-inch steel pipe pile.

Marine Mammal Occurrence and Take Calculation and Estimation

In this section we provide the information about the presence, density, or group dynamics of marine mammals that will inform the take calculations. We describe how the information provided above is brought together to produce a quantitative take estimate for each species.

Humpback Whale

Humpback whales occur in the mouth of the Chesapeake Bay and nearshore waters of Virginia during winter and spring months. Most detections during shipboard surveys were one or two juveniles per sightings. Although two individuals were detected in the vicinity of proposed project activities, there is no evidence that they linger for multiple days. Because no density estimates are available for the species in this area, the Navy estimated two takes for every 60 days of pile driving and drilling activities. Based on this information, NMFS has similarly estimated that two humpback whales may be taken by Level B harassment for every 60 days of pile driving and pre-drilling activities, which equates to 9 takes over 280 project days (Table 1). To be conservative, the Navy has requested 3 additional Level B harassment takes of humpback whales. Therefore, the

Navy is requesting, and NMFS is proposing to authorize 12 takes by Level B harassment of humpback whale (Table 9).

The largest Level A harassment zone for low-frequency cetaceans extends approximately 1002 m from the source during impact driving of a 48 inch steel pipe pile (Table 6). The Navy is planning to implement a 1,010 m shutdown zone for humpback whales during impact pile driving of the 48 inch steel pipe piles, and shutdown zones that include the entire Level A harassment isopleth for all activities, as indicated in Table 10. Therefore, the Navy did not request, and NMFS does not propose to authorize Level A harassment take of humpback whale.

Bottlenose Dolphin

The expected number of bottlenose dolphins in the project area was estimated using inshore seasonal densities provided in Engelhaupt *et al.* (2016) from vessel line-transect surveys near NAVSTA Norfolk and adjacent areas near Virginia Beach, Virginia, from August 2012 through August 2015 (Engelhaupt *et al.,* 2016). This density includes sightings inshore of the Chesapeake Bay from NAVSTA Norfolk west to the Thimble Shoals Bridge, and is the most representative density for the project area. NMFS multiplied the density of 1.38 dolphins/km^2 by the Level B harassment zone area for each activity for the project, and then by the number of days associated with that activity (see Table 8), which resulted in 14,989 takes by Level B harassment of bottlenose dolphins (see Table 9). There is insufficient information on relative abundance to apportion the takes precisely to the three stocks present in the area. We use the same approach to estimating the apportionment of takes to stock used in the previous IHAs in the area including the HRBT project (86 FR 17458; April 2, 2021), and the U.S. Navy Norfolk Rule (86 FR 24340; May 6, 2021). Given that most of the NNCES stock are found in the Pamlico Sound Estuarine, over 160 kilometers to Norfolk, the project will assume that no more than 200 of the requested takes will be from this stock. Since members of the northern migratory coastal and southern migratory coastal stocks are thought to occur in or near the Bay in greater numbers, we will conservatively assume that no more than half of the remaining takes will accrue to either of these stocks. Additionally, a subset of these takes would likely be comprised of Chesapeake Bay resident dolphins, although the size of that population is unknown.

The largest Level A harassment area for mid-frequency cetaceans is less than 40m, which is associated with impact pile driving of the 42 inch steel pipe. The Navy is planning on implementing a shutdown zone of 200 m during this activity as well as when pile driving the 24 inch concrete piles and 28 inch steel sheet piles. The Level A harassment zones for all other activities extend less than 10 m for mid-frequency cetaceans (see Table 6 and Table 7), and the Navy is planning to implement a minimum of a 10 m shutdown for all other activities not included in the list above (Table 10). Given the generally small size of the Level A harassment zones, and the Navy's shutdown plan, which includes the entire Level A harassment zone for all pile driving and drilling activities, we do not expect Level A harassment take of bottlenose dolphins. Therefore, the Navy did not request, and NMFS does not propose to authorize Level A harassment take of bottlenose dolphins (Table 9).

Table 8 – Bottlenose Dolphin Calculated Exposure Estimates.

Location	Activity	Production Days	Level A Harassment Area (km^2)	Level B Harassment Area (km^2)	Level A takes	Level B takes[1]
Pier 4	Vibratory Removal Timber Fender Piles	9	0.00001	49.9	0	620
	Pre-Drilling Concrete Fender Piles	6	0.000001	4.38	0	36
	Impact Drive Concrete Fender Piles	3	0.0000813	0.04	0	0

CEP-175	Impact Drive Polymeric Fender Piles	2	0.000001	0.000014	0	0
	Pre-Drilling Polymeric Fender Piles	2	0.000004	4.38	0	12*
	Vibratory Drive Polymeric Fender Piles	2	0.000004	11.1	0	31
Pier 3	Impact Drive Concrete Bearing Piles	150	0.00010155	0.04	0	8
CEP-176	Impact Drive Steel Bearing Piles	55	0.00174582	0.41	0	31*
	Impact Drive Sheet Piles	55	0.00119976	2.43	0	184*
	Vibratory Drive Steel Bearing Piles	55	0.00008	45.97	0	3489
	Vibratory Drive Sheet Piles	56	0.000025	39.9	0	3083
CEP-102	Impact Drive Steel Bearing Piles	2	0.00245817	1.37	0	4*
	Impact Drive Sheet Piles	2	0.00154729	7.96	0	22*
	Impact Drive Concrete Bearing Piles	6	0.0000813	0.02	0	0
	Pre-Drilling Concrete Bearing Piles	6	0.000001	4.38	0	36
	Vibratory Extraction Timber Fender Piles	3	0.00001	49.9	0	207
	Vibratory Extraction Concrete Fender Piles	6	0.00001	49.9	0	413
	Vibratory Extraction Polymeric Fender Piles	1	0.00001	49.9	0	69

	Vibratory Drive Steel Bearing Piles	2	0.000156	98.91	0	273
	Vibratory Drive Sheet Piles	2	0.000045	90.6	0	250
Pier 3T	Vibratory Extraction Concrete Bearing Piles	72	0.00001	49.9	0	4958
	Vibratory Extraction Timber Fender Piles	22	0.00001	49.9	0	1515
Total Bottlenose Dolphin Take Estimate					0[2]	14989[3]

1. All Level and Level B harassment exposure estimates were calculated using a density estimate of 1.38 Engelhaupt *et al.* (2016).
2. The maximum distance to the Level A harassment threshold is 35.6 m resulting from impact driving 42-inch steel pipe piles. This falls within the proposed shutdown zones (see Table 10). Therefore, no Level A harassment take was requested nor proposed to be authorized for bottlenose dolphins.
3. Some piles for a few projects are listed twice, due to the contractor choosing the installation method. However only the method resulting in the most takes was counted in the take totals. In all cases, vibratory driving resulted in the most takes. Numbers with an asterisk indicate calculated takes that were excluded from the total due to duplication.

Harbor Porpoise

Harbor porpoises are known to occur in the coastal waters near Virginia Beach (Hayes *et al.,* 2019). Density data for this species in the project vicinity do not exist as harbor porpoise sighting data collected by the U.S. Navy near NAVSTA Norfolk and Virginia Beach from 2012 to 2015 (Engelhaupt *et al.,* 2014; 2015; 2016) did not produce enough sightings to calculate densities. One group of two harbor porpoises was seen during spring 2015 (Engelhaupt *et al.,* 2016). Elsewhere in their range, harbor porpoises typically occur in groups of two to three individuals (Carretta *et al.,* 2001; Smultea *et al.,* 2017). Given the lack of density estimates for harbor porpoises in the proposed construction area, this exposure analysis (similar to the methods used in previous IHAs) assumes that there is a porpoise sighting once every 60 days of pile driving or drilling, which would equate to 6 sightings per year over 280 days of activity. Assuming an average group size of two (Hansen *et al.,* 2018; Elliser *et al.,* 2018), NMFS proposes to authorize 12 takes by Level B harassment of harbor porpoises (Table 9).

Harbor porpoises are members of the high-frequency hearing group which have Level A harassment isopleths as large as 1193 m during the 42 inch steel pipe pile installation using impact pile driving. The Navy has proposed a 500 meter shutdown zone for harbor porpoises during the aforementioned activity in addition to impact pile driving the 24 inch concrete piles and 28 inch steel sheets, as a reasonable area to observe and implement shutdowns for this small and cryptic species while avoiding an impracticable number of shutdowns. Consequently, the Navy has requested authorization of take by Level A harassment for harbor porpoises during the project. While NMFS believes that take by Level A harassment is not likely, due to the duration of time a harbor porpoise would be required to remain within the Level A harassment zone to accumulate enough energy to experience PTS, we propose to authorize 10 takes by Level A harassment as requested by the Navy (Table 9).

Harbor Seal

The expected number of harbor seals in the project area was estimated using systematic land- and vessel-based survey data for in-water and hauled-out seals collected by the U.S. Navy at the CBBT rock armor and portal islands from 2014 through 2019 (Jones *et al.,* 2020). The average daily seal count from the field season ranged from 8 to 23 seals, with an average of 13.6 harbor seals across all the field seasons.

The Navy expects, and NMFS concurs, that harbor seals are likely to be present from November to April. Consistent with previous nearby projects, NMFS calculated take by Level B harassment by multiplying 13.6 seals by 183, which is the number of pile driving/drilling days expected to occur from November to April, which results in 2489 harbor seal takes. However, NMFS believes this may be an overestimate of take as recent monitoring reports from a nearby-completed project observed 0 harbor seals during the course of their project (HRCP, *Unpublished)*. With these new data in hand, we propose to alter our estimation method for this species and propose to authorize half of the take estimated above to achieve a more realistic number of seals that may be encountered, while still conservatively estimating noise exposures. Therefore, NMFS proposes to authorize 1,244 takes of harbor seals.

The largest Level A harassment isopleth for phocid species is less than 550 m, which would occur during the installation of the 42 inch steel pipe pile by impact pile driving. We are proposing to implement a 200 m shutdown zone for this activity in addition to the installation of the 24 inch concrete piles and 28 inch steel sheet piles by impact pile driving (Table 10). Given the area of the Level A harassment zone that would exceed the implemented shutdown zone for these activities, and the cryptic nature of the species, the Navy is requesting 16 takes by Level A harassment of harbor seals. For all other activities, the proposed shutdown zones exceed the calculated Level A harassment isopleth for phocid species. Therefore, NMFS proposes to authorize 1,228 takes by Level B harassment, and 16 takes by Level A harassment of harbor seals (Table 9).

Gray Seal

Very little information is available about the occurrence of gray seals in the Chesapeake Bay and coastal waters. Survey data collected by the U.S. Navy at the CBBT portal islands from 2014 through 2018 (Rees *et al.,* 2016; Jones *et al.,* 2018) observed one gray seal in February 2015 and one seal in February of 2016, while no seals were observed at any other time. Maintaining the assumption that gray seals may utilize the Chesapeake Bay waters, the Navy conservatively estimates that one gray seal may be exposed to noise levels above the Level B harassment threshold for every 60 days of vibratory pile driving during the six month period when they are most likely to be present.

The Level A harassment isopleth for phocids is noted above for harbor seals, while the largest Level B harassment zone area is anticipated during drilling for installation of the 42 inch steel pipes (~16 km^2). The Navy calculated a total of 3 exposures for gray seals during the course of the project and they are expected to be very uncommon in the Project area. It is anticipated that up to 20 percent of gray seal exposures would be at or above the Level A harassment threshold based on the proportion of the project's pile driving and drilling activities that could exceed the Level A harassment threshold. Therefore, the Navy is requesting, and NMFS is proposing to authorize, 1 take by Level A harassment and 2 takes by Level B harassment of gray seals (Table 9).

Table 9 – Proposed Authorized Amount of Taking, by Level A Harassment and Level B Harassment, by Species and Stock and Percent of Take by Stock

Common Name	Stock	Level A Harassment	Level B Harassment	Total	Percent of Stock
Humpback whale	Gulf of Maine[b]	0	12	12	1
Bottlenose dolphin	WNA Coastal, Northern Migratory[a,c,d]	0	19327	19327	111
	WNA Coastal, Southern Migratory[a,c,d]	0	19327	19327	197
	Northern NC Estuarine[a,c,d]	0	200	200	24
Harbor porpoise	Gulf of Maine/Bay of Fundy	10	12	22	< 0.01
Harbor seal	WNA	16	1,228	1244	2
Gray seal	WNA	1	2	3	<0.01

[a] Take estimates are weighted based on calculated percentages of population for each distinct stock, assuming animals present would follow same probability of presence in the project area. Please see the **Small Numbers** section for additional information.
[b] West Indies DPS. Please see the **Description of Marine Mammals in the Area of Specified Activities** section for further discussion.
[c] Assumes multiple repeated takes of same individuals from small portion of each stock as well as repeated takes of Chesapeake Bay resident population (size unknown). Please see the **Small Numbers** section for additional information.
[d] The sum of authorized take for the three stocks of bottlenose dolphins does not add up to the total authorized number (14989) due to rounding.

Proposed Mitigation

In order to issue an IHA under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to the activity, and other means of effecting the least practicable impact on the species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stock for taking for certain subsistence uses (latter not applicable for this action). NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting the activity or other means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, we carefully consider two primary factors:

(1) The manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal species or stocks, and their habitat. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned), the likelihood of effective implementation (probability implemented as planned), and;

(2) The practicability of the measures for applicant implementation, which may consider such things as cost, impact on operations, and, in the case of a military readiness activity, personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

The following mitigation measures are proposed in the IHA:

- Avoid direct physical interactions with marine mammals during construction activity. If a marine mammal comes within 10 meters of such activity, operations must cease and vessels must reduce speed to the minimum level required to maintain steerage and safe working conditions, as necessary to avoid direct physical interaction;

- The Navy will conduct trainings between construction supervisors and crews and the marine mammal monitoring team prior to the start of all activities subject to this IHA and when new personnel join the work, to explain responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures; and
- Pile driving activity must be halted upon observation of either a species for which incidental take is not authorized or a species for which incidental take has been authorized but the authorized number of takes has been met, entering or within the harassment zone.

The following mitigation measures apply to the Navy's in-water construction activities:

Establishment of Shutdown Zones—The Navy will establish shutdown zones for all pile driving and removal and drilling activities. The purpose of a shutdown zone is generally to define an area within which shutdown of the activity would occur upon sighting of a marine mammal (or in anticipation of an animal entering the defined area). Shutdown zones will vary based on the activity type and marine mammal hearing group (Table 9).

Protected Species Observers (PSOs)—The placement of PSOs during all pile driving and removal and drilling activities (described in the **Proposed Monitoring and Reporting** section) will ensure that the entire shutdown zone is visible. Should environmental conditions deteriorate such that the entire shutdown zone would not be visible (*e.g.,* fog, heavy rain), pile driving and removal and drilling must be delayed until the PSO is confident marine mammals within the shutdown zone could be detected.

Monitoring for Level A and B Harassment—The Navy will monitor the Level B harassment zones to the extent practicable, and all of the Level A harassment zones. The Navy will monitor at least a portion of the Level B harassment zone on all pile driving, removal or drilling days. Monitoring zones provide utility for observing by establishing monitoring protocols for areas adjacent to the shutdown zones. Monitoring zones enable observers to be aware of and communicate the presence of marine mammals in the project area outside the shutdown zone and thus prepare for a potential cessation of activity should the animal enter the shutdown zone.

Pre-activity Monitoring—Prior to the start of daily in-water construction activity, or whenever a break in pile driving/removal of 30 minutes or longer occurs, PSOs will observe the shutdown and monitoring zones for a period of 30 minutes. The shutdown zone will be considered cleared when a marine mammal has not been observed within the zone for that 30-minute period. If a marine mammal is observed within the shutdown zones listed in Table 10, pile driving and drilling activity must be delayed or halted. If pile driving and/or drilling is delayed or halted due to the presence of a marine mammal, the activity may not commence or resume until either the animal has voluntarily exited and been visually confirmed beyond the shutdown zones or 15 minutes have passed without re-detection of the animal. When a marine mammal for which Level B harassment take is authorized is present in the Level B harassment zone, activities may begin and Level B harassment take will be recorded. If work ceases for more than 30 minutes, the pre-activity monitoring of the shutdown zones will commence. A determination that the shutdown zone is clear must be made during a period of good visibility (*i.e.,* the entire shutdown zone and surrounding waters must be visible to the naked eye).

Soft Start—Soft-start procedures are used to provide additional protection to marine mammals by providing warning and/or giving marine mammals a chance to leave the area prior to the hammer operating at full capacity. For impact pile driving, contractors will be required to provide an initial set of three strikes from the hammer at reduced energy, followed by a 30-second waiting period, then two subsequent reduced-energy strike sets. Soft start will be implemented at the start of each day's impact pile driving and at any time following cessation of impact pile driving for a period of 30 minutes or longer.

Table 10—Shutdown Zones (m) During Pile Installation and Removal

Pile type, size, and driving method	Humpback whales	Porpoises	All other species
Vibratory drive 14-inch timber piles	30	30	30
Vibratory drive 13-inch polymeric piles	30	30	30
Impact drive 13-inch polymeric piles	30	30	30
Vibratory drive 16-inch and 18-inch concrete piles	30	30	30
Impact drive 16-inch and 18-inch concrete piles	50	45	45
Vibratory drive 24-inch concrete piles	10	10	10
Impact drive 24-inch concrete piles	160	500	200
Vibratory drive 28-inch steel sheet piles	70	65	65
Impact drive 28-inch steel sheet piles	780	500	200
Vibratory drive 42-inch steel pipe piles	80	120	50
Impact drive 42-inch steel pipe piles	1,010	500	200
Pre-Drilling	20	500	200

Based on our evaluation of the applicant’s proposed measures, as well as other measures considered by NMFS, NMFS has preliminarily determined that the proposed mitigation measures provide the means effecting the least practicable impact on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Proposed Monitoring and Reporting

In order to issue an IHA for an activity, section 101(a)(5)(D) of the MMPA states that NMFS must set forth requirements pertaining to the monitoring and reporting of such taking. The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the proposed action area. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

Monitoring and reporting requirements prescribed by NMFS should contribute to improved understanding of one or more of the following:

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.*, presence, abundance, distribution, density).
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) affected species (*e.g.*, life history, dive patterns); (3) co-occurrence of marine mammal species with the action; or (4) biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas).
- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors.
- How anticipated responses to stressors impact either: (1) long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks.

- Effects on marine mammal habitat (*e.g.*, marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat).
- Mitigation and monitoring effectiveness.

The Navy has submitted a Marine Mammal Monitoring Plan to NMFS that has been approved for this project.

Visual Monitoring

Marine mammal monitoring during pile driving and removal and drilling activities must be conducted by PSOs meeting NMFS' standards and in a manner consistent with the following:

- Independent PSOs (*i.e.*, not construction personnel) who have no other assigned tasks during monitoring periods must be used;
- At least one PSO must have prior experience performing the duties of a PSO during construction activity pursuant to a NMFS-issued incidental take authorization;
- Other PSOs may substitute education (degree in biological science or related field) or training for experience; and
- Where a team of three or more PSOs is required, a lead observer or monitoring coordinator must be designated. The lead observer must have prior experience working as a marine mammal observer during construction.

PSOs must have the following additional qualifications:

- Ability to conduct field observations and collect data according to assigned protocols;
- Experience or training in the field identification of marine mammals, including the identification of behaviors;
- Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;

- Writing skills sufficient to prepare a report of observations including but not limited to the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates, times, and reason for implementation of mitigation (or why mitigation was not implemented when required); and marine mammal behavior; and
- Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary.

The Navy must establish the following monitoring locations. For all pile driving activities, a minimum of one PSO must be assigned to the active pile driving or drilling location to monitor the shutdown zones and as much of the Level A and Level B harassment zones as possible. If the active project location includes demolition activities, then the next adjacent pier may be used as an appropriate monitoring location ensuring that the aforementioned criteria is met. Monitoring must be conducted by a minimum of two PSOs for impact driving, and a minimum of three PSOs for vibratory and drilling activities. For activities in Table 7 with Level B harassment zones larger than 3000 m, at least one PSO must be stationed on either Pier 14 or the North Jetty to monitor the part of the zone exceeding the edge of the Norfolk Naval Station (see Figure 3). The third PSO for vibratory and drilling activities would be located on Pier 1. PSOs will be placed at the best vantage point(s) practicable to monitor for marine mammals and implement shutdown/delay procedures (See Figure 3 for representative monitoring locations). If changes are necessary to ensure full coverage of the Level A harassment zones, the Navy shall contact NMFS to alter observer locations (*e.g.,* vessel blocking view from pier location).

Monitoring will be conducted 30 minutes before, during, and 30 minutes after all in water construction activities. In addition, observers shall record all incidents of marine mammal occurrence, regardless of distance from activity, and shall document any behavioral reactions in concert with distance from drilling or piles being driven or removed. Pile driving activities include the time to install or remove a single pile or series of piles, as long as the time elapsed between uses of the pile driving equipment is no more than 30 minutes.

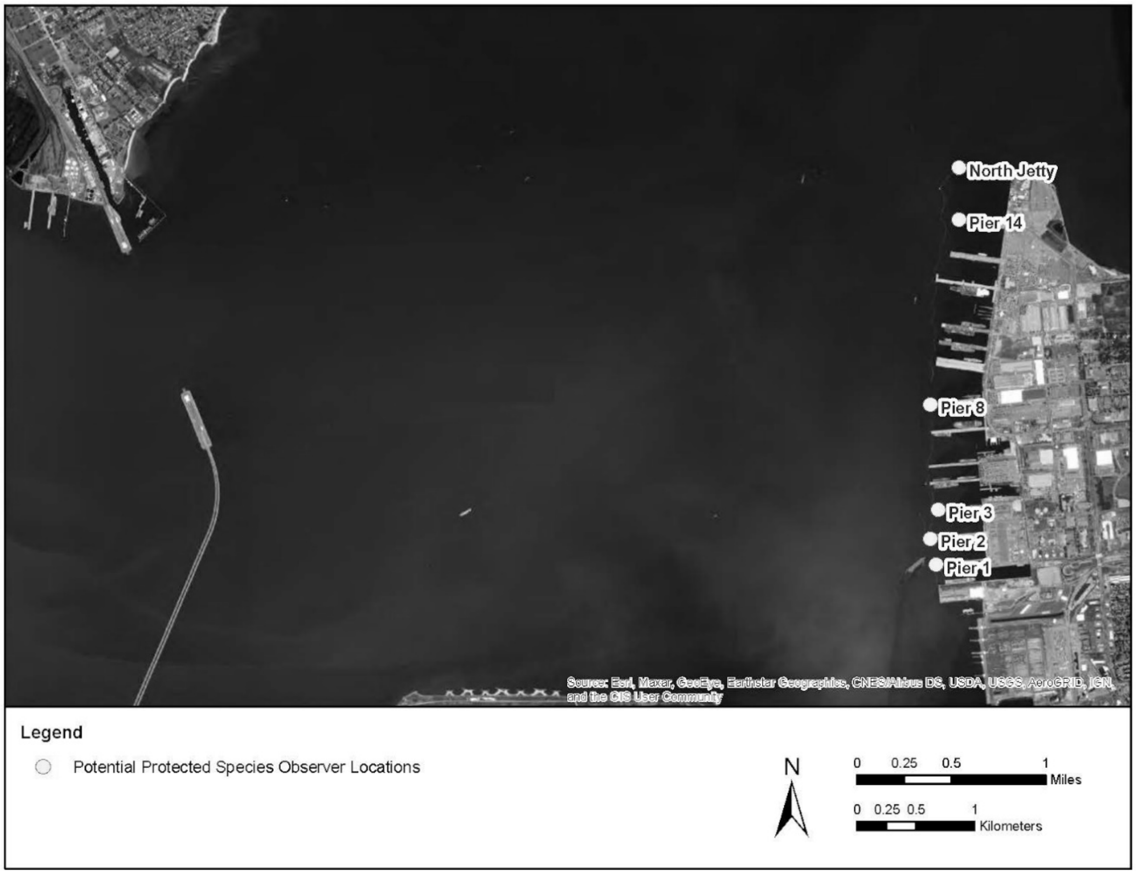

Figure 3. Protected Species Observer Locations at Naval Station Norfolk in Norfolk, Virginia.

Acoustic Monitoring

The Navy intends to conduct a sound source verification (SSV) study for various types of pile driving, extraction, and drilling associated with this proposed project. Monitoring shall include two underwater positions and shall be conducted in accordance with NMFS guidance (NMFS 2012). One underwater location shall be at the standard 10 meters from the sound source, while the other positions shall be located at a distance of at least 20 times water depth at the pile. If the contractor determines that this distance interferes with shipping lanes for vessel traffic, or if there is no other reasons why this criteria cannot be achieved (e.g., creates an unsafe scenario for crew), the Navy's Acoustic Monitoring Plan must offer an alternate site as close to the criteria as possible for NMFS' approval. Measurements shall be collected as detailed in the Navy's application (Table 13-1) for each pile type during the entire pile-driving/extraction/drilling event. Monitoring shall be conducted for 10 percent of each type of activity that has not previously been monitored at NAVSTA Norfolk (See Table 11 for complete list).

Table 11—Acoustic Monitoring Summary.

Pile Type[1]	Count[2]	Method of Install/Removal[2]	Number Monitored[2]
13-inch polymeric	14	Vibratory	5
13-inch polymeric	14	Impact	5
13-inch polymeric	14	Drilling	5
16- or 18- inch concrete	308	Vibratory	10
24-inch concrete	47	Impact	10
42-inch steel pipe	113	Vibratory	10
42-inch steel pipe	113	Impact	10
28-inch steel sheet	229	Vibratory	10
28-inch steel sheet	229	Impact	10

1. Data has previously been collected on the impact driving of 24-inch concrete piles and timber piles at NAVSTA Norfolk; therefore, no additional data collection is required for these pile types.
2. Some piles may be either vibratory or impact pile driving, or a combination of both. The acoustic monitoring report at the end of Year 1 construction shall clarify which installation method was utilized and monitored for each pile type.

Environmental data shall be collected, including but not limited to, the following: wind speed and direction, air temperature, humidity, surface water temperature, water depth, wave height, weather conditions, and other factors that could contribute to influencing underwater sound levels (*e.g.,* aircraft, boats, etc.).

Reporting

A draft marine mammal monitoring report and a draft acoustic monitoring report will be submitted to NMFS within 90 days after the completion of pile driving and removal and drilling activities, or 60 days prior to a requested date of issuance of any future IHAs or LOAs for the project, or other projects at the same location, whichever comes first. If the Navy goes ahead with their plan to request incidental take authorization for future phases of this project, the future LOA will be requested for coverage beginning on April 1, 2023; the draft reports under this proposed IHA must be submitted to NMFS by January 31, 2023. The marine mammal report will include an overall description of work completed, a narrative regarding marine mammal sightings, and associated PSO data sheets. Specifically, the report must include:

- Dates and times (begin and end) of all marine mammal monitoring.
- Construction activities occurring during each daily observation period, including: a) how many and what type of piles were driven or removed and the method (*i.e.*, impact or vibratory); and b) the total duration of time for each pile (vibratory driving) or hole (drilling) and number of strikes for each pule (impact driving);
- PSO locations during marine mammal monitoring; and
- Environmental conditions during monitoring periods (at beginning and end of PSO shift and whenever conditions change significantly), including Beaufort sea state and any other relevant weather conditions including cloud cover, fog, sun glare, and overall visibility to the horizon, and estimated observable distance.

Upon observation of a marine mammal the following information must be reported:

- Name of PSO who sighted the animal(s) and PSO location and activity at time of sighting;
- Time of sighting;
- Identification of the animal(s) (*e.g.,* genus/species, lowest possible taxonomic level, or unidentified), PSO confidence in identification, and the composition of the group if there is a mix of species;
- Distance and location of each observed marine mammal relative to the pile being driven or hole being drilled for each sighting;
- Estimated number of animals (min/max/best estimate);
- Estimated number of animals by cohort (adults, juveniles, neonates, group composition, etc.);
- Description of any marine mammal behavioral observations (*e.g.,* observed behaviors such as feeding or traveling), including an assessment of behavioral responses thought to have resulted from the activity (*e.g.,* no response or changes in behavioral state such as ceasing feeding, changing direction, flushing, or breaching);
- Number of marine mammals detected within the harassment zones, by species; and
- Detailed information about implementation of any mitigation (e.g., shutdowns and delays), a description of specified actions that ensured, and resulting changes in behavior of the animal(s), if any.

The acoustic monitoring report must contain the informational elements described in the Acoustic Monitoring Plan and, at minimum, must include:

- Hydrophone equipment and methods: recording device, sampling rate, distance (m) from the pile where recordings were made; depth of water and recording device(s);
- Type and size of pile being driven, substrate type, method of driving during recordings (*e.g.,* hammer model and energy), and total pile driving duration;
- Whether a sound attenuation device is used and, if so, a detailed description of the device used and the duration of its use per pile;
- For impact pile driving and/or drilling (per pile): Number of strikes and strike rate; depth of substrate to penetrate; pulse duration and mean, median, and maximum sound levels (dB re: 1 µPa): root mean square sound pressure level (SPL_{rms}); cumulative sound exposure level (SEL_{cum}), peak sound pressure level (SPL_{peak}), and single-strike sound exposure level ($SEL_{s\text{-}s}$); and
- For vibratory driving/removal and/or drilling (per pile): Duration of driving per pile; mean, median, and maximum sound levels (dB re: 1 µPa): root mean square sound pressure level (SPL_{rms}), cumulative sound exposure level (SEL_{cum}) (and timeframe over which the sound is averaged).

If no comments are received from NMFS within 30 days, the draft reports will constitute the final reports. If comments are received, a final report addressing NMFS' comments must be submitted within 30 days after receipt of comments. All PSO datasheets and/or raw sighting data must be submitted with the draft marine mammal report.

In the event that personnel involved in the construction activities discover an injured or dead marine mammal, the Navy must immediately cease the specified activities and shall report the incident to the Office of Protected Resources (OPR) (*PR.ITP.MonitoringReports@noaa.gov*) NMFS and to the Greater Atlantic Region New England/Mid-Atlantic Regional Stranding Coordinator as soon as feasible. If the death or injury was clearly caused by the specified activity, the Navy must immediately cease the specified activities until NMFS is able to review the circumstances of the incident and determine what, if any, additional measures are appropriate to ensure compliance with the terms of the authorization. The Navy must not resume their activities until notified by NMFS.

The report must include the following information:

i. Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);

ii. Species identification (if known) or description of the animal(s) involved;

iii. Condition of the animal(s) (including carcass condition if the animal is dead);

iv. Observed behaviors of the animal(s), if alive;

v. If available, photographs or video footage of the animal(s); and

vi. General circumstances under which the animal was discovered.

Negligible Impact Analysis and Determination

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be "taken" through harassment, NMFS considers other factors, such as the likely nature of any responses (*e.g.*, intensity, duration), the context of any responses (*e.g.*, critical reproductive time or location, migration), as well as effects on habitat, and the likely effectiveness of the mitigation. We also assess the number, intensity, and context of estimated takes by evaluating this information relative to population status.

Consistent with the 1989 preamble for NMFS's implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the environmental baseline (*e.g.*, as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

Pile driving and removal and drilling activities have the potential to disturb or displace marine mammals. Specifically, the project activities may result in take, in the form of Level A and Level B harassment from underwater sounds generated from pile driving and removal and drilling. Potential takes could occur if individuals are present in the ensonified zone when these activities are underway.

The takes from Level A and Level B harassment would be due to potential behavioral disturbance, TTS, and PTS. No serious injury or mortality is anticipated given the nature of the activity and measures designed to minimize the possibility of injury to marine mammals. The potential for harassment is minimized through the construction method and the implementation of the planned mitigation measures (see **Proposed Mitigation** section).

The Level A harassment zones identified in Tables 6 and 7 are based upon an animal exposed to pile driving or drilling multiple piles per day. Considering the short duration to impact drive each pile and breaks between pile installations (to reset equipment and move pile into place), means an animal would have to remain within the area estimated to be ensonified above the Level A harassment threshold for multiple hours. This is highly unlikely given marine mammal movement throughout the area, especially for small, fast moving species such as small cetaceans and pinnipeds. Additionally, no Level A harassment is anticipated for humpback whales due to the proposed mitigation measures, which we expect the Navy will be able to effectively implement given the small Level A harassment zone sizes and high visibility of humpback whales. If an animal was exposed to accumulated sound energy, the resulting PTS would likely be small (*e.g.,* PTS onset) at lower frequencies where pile driving energy is concentrated, and unlikely to result in impacts to individual fitness, reproduction, or survival.

The Navy's proposed pile driving project precludes the likelihood of serious injury or mortality. For all species and stocks, take would occur within a limited, confined area (immediately surrounding NAVSTA Norfolk in the Chesapeake Bay area) of the stock's range. Level A and Level B harassment will be reduced to the level of least practicable adverse impact through use of mitigation measures described herein. Furthermore, the amount of take proposed to be authorized is extremely small when compared to stock abundance.

Effects on individuals that are taken by Level B harassment, on the basis of reports in the literature as well as monitoring from other similar activities, will likely be limited to reactions such as increased swimming speeds, increased surfacing time, or decreased foraging (if such activity were occurring) (*e.g.*, Thorson and Reyff 2006). Individual animals, even if taken multiple times, will most likely move away from the sound source and be temporarily displaced from the areas of pile driving or drilling, although even this reaction has been observed primarily only in association with impact pile driving. The pile driving and drilling activities analyzed here are similar to, or less impactful than, numerous other construction activities conducted along both Atlantic and Pacific coasts, which have taken place with no known long-term adverse consequences from behavioral harassment. Furthermore, many projects similar to this one are also believed to result in multiple takes of individual animals without any documented long-term adverse effects. Level B harassment will be minimized through use of mitigation measures described herein and, if sound produced by project activities is sufficiently disturbing, animals are likely to simply avoid the area while the activity is occurring, particularly as the project is located on a busy waterfront with high amounts of vessel traffic.

As previously described, UMEs have been declared for Northeast pinnipeds (including harbor seal and gray seal) and Atlantic humpback whales. However, we do not expect takes proposed for authorization in this action to exacerbate or compound upon these ongoing UMEs. As noted previously, no injury, serious injury, or mortality is expect or proposed for authorization, and Level B harassment takes of humpback whale, harbor seal and gray seal will be reduced to the level of least practicable adverse impact through the incorporation of the proposed mitigation measures. For the WNA stock of gray seal, the estimated stock abundance is 451,600 animals. Given that only 1 to 3 takes by Level B harassment are proposed for this stock annually, we do not expect this proposed authorization to exacerbate or compound upon the ongoing UME.

For the WNA stock of harbor seals, the estimated abundance is 61,336 individuals. The estimated M/SI for this stock (339) is well below the PBR (1,729). As such, the proposed Level B harassment takes of harbor seal are not expected to exacerbate or compound upon the ongoing UMEs.

With regard to humpback whales, the UME does not yet provide cause for concern regarding population-level impacts. Despite the UME, the relevant population of humpback whales (the Gulf of Maine stock and the West Indies breeding population, or distinct population segment (DPS)) remains healthy. The Gulf of Marine stock of humpback whales was listed as strategic under the MMPA from 1995 through the 2018 SARs but has since been removed from this list. Annual SARs have also indicated an increasing population trend for the stock, with a current abundance estimate of 1369 whales (Hayes *et al.,* 2021).

Prior to 2016, humpback whales were listed under the ESA as an endangered species worldwide. Following a 2015 global status review (Bettridge *et al.,* 2015), NMFS established 14 DPSs with different listing statuses (81 FR 62259; September 8, 2016) pursuant to the ESA. The West Indies DPS, which consists of the whales whose breeding range includes the Atlantic margin of the Antilles from Cuba to northern Venezuela, and whose feeding range primarily includes the Gulf of Maine, eastern Canada, and western Greenland, was delisted. The status review identified harmful algal blooms, vessel collisions, and fishing gear entanglements as relevant threats for this DPS, but noted that all other threats are considered likely to have no or minor impact on population size or the growth rate of this DPS (Bettridge *et al.,* 2015). As described in Bettridge *et al.,* (2015), the West Indies DPS has a substantial population size (*i.e*., 12,312 (95 percent CI 8,688-15,954) whales in 2004-05 (Bettridge *et al.,* 2003)), and appears to be experiencing consistent growth. This trend is consistent with that in 2021 draft SARs as mentioned above. Further, NMFS is proposing to authorize no more than eight takes by Level B harassment annually of humpback whale.

The project is also not expected to have significant adverse effects on affected marine mammals' habitats. The project activities will not modify existing marine mammal habitat for a significant amount of time. The activities may cause some fish to leave the area of disturbance, thus temporarily impacting marine mammals' foraging opportunities in a limited portion of the foraging range; but, because of the short duration of the activities and the relatively small area of the habitat that may be affected (with no known particular importance to marine mammals), the impacts to marine mammal habitat are not expected to cause significant or long-term negative consequences.

In summary and as described above, the following factors primarily support our preliminary determination that the impacts resulting from this activity are not expected to adversely affect the species or stock through effects on annual rates of recruitment or survival:

- No mortality is anticipated or authorized;

- Authorized Level A harassment would be very small amounts and of low degree;
- The intensity of anticipated takes by Level B harassment is relatively low for all stocks;
- The number of anticipated takes is very low for humpback whale, harbor porpoise, and gray seal;
- The specified activity and associated ensonifed areas are very small relative to the overall habitat ranges of all species and do not include habitat areas of special significance (Biologically Important Areas or ESA-designated critical habitat);
- The lack of anticipated significant or long-term negative effects to marine mammal habitat;
- The presumed efficacy of the mitigation measures in reducing the effects of the specified activity; and
- Monitoring reports from similar work in the Chesapeake Bay have documented little to no effect on individuals of the same species impacted by the specified activities.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the proposed monitoring and mitigation measures, NMFS preliminarily finds that the total marine mammal take from the proposed activity will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted above, only small numbers of incidental take may be authorized under sections 101(a)(5)(A) and (D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are available, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. When the predicted number of individuals to be taken is fewer than one third of the species or stock abundance, the take is considered to be of small numbers. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

The amount of take NMFS proposes to authorize is below one third of the estimated stock abundance for humpback whale, harbor porpoise, gray seal, the Northern North Carolina Estuarine Stock of bottlenose dolphin and harbor seal (in fact, take of individuals is less than 5 percent of the abundance of the affected stocks, see Table 9). This is likely a conservative estimate because they assume all takes are of different individual animals which is likely not the case. Some individuals may return multiple times in a day, but PSOs would count them as separate takes if they cannot be individually identified.

There are three bottlenose dolphin stocks that could occur in the project area. Therefore, the estimated 14,989 dolphin takes by Level B harassment would likely be split among the western North Atlantic northern migratory coastal stock, the western North Atlantic southern migratory coastal stock, and the northern North Carolina Estuarine stock (NNCES). Based on the stocks' respective occurrence in the area, NMFS estimates that there would be no more than 200 takes from the NNCES stock, representing 24 percent of that population, with the remaining takes split evenly between the northern and southern migratory coastal stocks. Based on the consideration of various factors as described below, we have determined the number of individuals taken would comprise less than one-third of the best available population abundance estimate of either coastal migratory stocks. Detailed descriptions of the stocks' ranges have been provided in the **Description of Marine Mammals in the Area of Specified Activities** section.

Both the northern migratory coastal and southern migratory coastal stocks have expansive ranges and they are the only dolphin stocks thought to make broad-scale, seasonal migrations in coastal waters of the western North Atlantic. Given the large ranges associated with these two stocks it is unlikely that large segments of either stock would approach the project area and enter into the Chesapeake Bay. The majority of both stocks are likely to be found widely dispersed across their respective habitat ranges and unlikely to be concentrated in or near the Chesapeake Bay.

Furthermore, the Chesapeake Bay and nearby offshore waters represent the boundaries of the ranges of each of the two coastal stocks during migration. The northern migratory coastal stock is found during warm water months from coastal Virginia, including the Chesapeake Bay and Long Island, New York. The stock migrates south in late summer and fall. During cold water months, dolphins may be found in coastal waters from Cape Lookout, North Carolina, to the North Carolina/Virginia border. During January-March, the southern Migratory coastal stock appears to move as far south as northern Florida. From April-June, the stock moves back north to North Carolina. During the warm water months of July-August, the stock is presumed to occupy the coastal waters north of Cape Lookout, North Carolina, to Assateague, Virginia, including the Chesapeake Bay. There is likely some overlap between the northern and southern migratory stocks during spring and fall migrations, but the extent of overlap is unknown.

The Chesapeake Bay and waters offshore of the mouth are located on the periphery of the migratory ranges of both coastal stocks (although during different seasons). Additionally, each of the migratory coastal stocks are likely to be located in the vicinity of the Bay for relatively short timeframes. Given the limited number of animals from each migratory coastal stock likely to be found at the seasonal migratory boundaries of their respective ranges, in combination with the short time periods (~ 2 months) animals might remain at these boundaries, it is reasonable to assume that takes are likely to occur only within some small portion of either of the migratory coastal stocks.

Many of the dolphin observations in the Bay are likely repeated sightings of the same individuals. The Potomac-Chesapeake Dolphin Project has observed over 1,200 unique animals since observations began in 2015. Re-sightings of the same individual can be highly variable. Some dolphins are observed once per year, while others are highly regular with greater than 10 sightings per year (Mann, Personal Communication). Similarly, using available photo-identification data, Engelhaupt *et al.,* (2016) determined that specified individuals were often observed in close proximity to their original sighting locations and were observed multiple times in the same season or same year. Ninety-one percent of re-sighted individuals (100 of 110) in the study area were recorded less than 30 km from the initial sighting location. Multiple sightings of the same individual would considerably reduce the number of individual animals that are taken by harassment. Furthermore, the existence of a resident dolphin population in the Bay would increase the percentage of dolphin takes that are actually re-sightings of the same individuals.

In summary and as described above, the following factors primarily support our determination regarding the incidental take of small numbers of the affected stocks of a species or stock:

- The take of marine mammal stocks authorized for take comprises less than 5 percent of any stock abundance (with the exception of the Northern and Southern Migratory stocks of bottlenose dolphin);
- Potential bottlenose dolphin takes in the project area are likely to be allocated among three distinct stocks;
- Bottlenose dolphin stocks in the project area have extensive ranges and it would be unlikely to find a high percentage of the individuals of any one stock

concentrated in a relatively small area such as the project area or the Chesapeake Bay;

- The Chesapeake Bay represents the migratory boundary for each of the specified dolphin stocks and it would be unlikely to find a high percentage of any stock concentrated at such boundaries; and
- Many of the takes would likely be repeats of the same animals and likely from a resident population of the Chesapeake Bay.

Based on the analysis contained herein of the proposed activity (including the proposed mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS preliminarily finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks.

Unmitigable Adverse Impact Analysis and Determination

There are no relevant subsistence uses of the affected marine mammal stocks or species implicated by this action. Therefore, NMFS has determined that the total taking of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

Endangered Species Act

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA: 16 U.S.C. 1531 *et seq*.) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the issuance of IHAs, NMFS consults internally whenever we propose to authorize take for endangered or threatened species.

No incidental take of ESA-listed species is proposed for authorization or expected to result from this activity. Therefore, NMFS has determined that formal consultation under section 7 of the ESA is not required for this action.

Proposed Authorization

As a result of these preliminary determinations, NMFS proposes to issue an IHA to the U.S. Navy for conducting pile driving and drilling activities associated with the demolition and reconstruction of Pier 3 at Naval Station Norfolk, in Norfolk, Virginia from April 1, 2022 through March 31, 2023, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. A draft of the proposed IHA can be found at *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act*.

Request for Public Comments

We request comment on our analyses, the proposed authorization, and any other aspect of this notice of proposed IHA for the proposed Pier 3 project. We also request at this time comment on the potential renewal of this proposed IHA as described in the paragraph below. Please include with your comments any supporting data or literature citations to help inform decisions on the request for this IHA or a subsequent Renewal IHA.

On a case-by-case basis, NMFS may issue a one-time, one-year Renewal IHA following notice to the public providing an additional 15 days for public comments when (1) up to another year of identical or nearly identical, or nearly identical, activities as described in the **Description of Proposed Activities** section of this notice is planned or (2) the activities as described in the **Description of Proposed Activities** section of this notice would not be completed by the time the IHA expires and a renewal would allow for completion of the activities beyond that described in the *Dates and Duration* section of this notice, provided all of the following conditions are met:

- A request for renewal is received no later than 60 days prior to the needed Renewal IHA effective date (recognizing that the Renewal IHA expiration date cannot extend beyond one year from expiration of the initial IHA).

- The request for renewal must include the following:

(1) An explanation that the activities to be conducted under the requested Renewal IHA are identical to the activities analyzed under the initial IHA, are a subset of the activities, or include changes so minor (*e.g.*, reduction in pile size) that the changes do not affect the previous analyses, mitigation and monitoring requirements, or take estimates (with the exception of reducing the type or amount of take).

(2) A preliminary monitoring report showing the results of the required monitoring to date and an explanation showing that the monitoring results do not indicate impacts of a scale or nature not previously analyzed or authorized.

Upon review of the request for renewal, the status of the affected species or stocks, and any other pertinent information, NMFS determines that there are no more than minor changes in the activities, the mitigation and monitoring measures will remain the same and appropriate, and the findings in the initial IHA remain valid.

Dated: January 20, 2022.

Kimberly Damon-Randall,

Director, Office of Protected Resources,

National Marine Fisheries Service.

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